

# **TABLES**

**Table 3.1**  
**Summary of Historical Documents Regarding Waste Disposal in San Diego**  
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Document Type	Source	Addressed to:	Date	Waste Type	Amount	Units	Comments				
Letter	Convair	San Diego DPW	2/18/1957	Convair was requested to provide data pertaining to the existing volume of waste solution.							
				Contaminated process solutions	20,000	gallons	Disposed of by Convair in 1956 to ??				
				Other liquid wastes	121,000	gallons					
				Cyanide wastes	-			Encased in concrete and dumped at sea under State supervision			
				Magnesium wastes	5,000	pounds	"In the past magnesium wastes have been buried. Five thousand pounds were disposed of in this manner in 1956."				
				Breakdown of process solutions:							
				Alkali (caustic)	17,100	gallons	"Solid wastes include magnesium tunings and cake cyanides. In 1956 Convair disposed of 20,000 gallons of contaminated process solutions and 121,000 gallons of other liquid wastes. Cyanide wastes are encased in concrete and dumped at sea under State supervision. In the past magnesium wastes have been buried. Five thousand pounds were disposed of in this manner. The present method of disposal of all other solutions is hauling and dumping into the sanitary fill in the Mission Bay area. Solutions bulking over 500 gallon and which can be hauled in a steel tank are hauled by a contractor....Although most of the acid and alkaline solutions are hauled untreated, one tank full was neutralized before hauling. This treatment took six hours and 800 pounds of caustic for 2500 gallons of solution...It is estimated that the amount of the foregoing wastes will be 200,000 gallons per year for the next five years. Of this 149,000 gallons will be paint and oily wastes, and 51,000 gallons of the process solutions."				
				(Class I Acid)	14,500	gallons					
				Chromic (Class I Acid)	5800	gallons					
				Hydrofluoric (Class I Acid)	3480	gallons					
				Nitric (Class I Acid)	3335	gallons					
				Sulphuric (Class I Acid)	1015	gallons					
				Hydrochloric (Class I Acid)	870	gallons					
Chromic (Class II Acid)	16,900	gallons									
Sodium Dischromate (Class III Acid)	2,500	gallons									
Letter	Rohr Aircraft Corporation	San Diego DPW	2/20/1957	"Our present annual industrial waste disposal is comprised of:"							
				Hydrochloric - sulfuric	2000	gallons	3 month frequency				
				20% Nitric - 4% Hydrofluoric	2000	gallons	2.5 week frequency				
				Chromic- Nitric	2000	gallons	2 month frequency				
				Caustic	2000	gallons	6 month frequency				
				5% Cyanide solution 10% Cyanide salts	1000	gallons	6 month frequency				
"It is believed that over a period of the next five years, this present rate will be doubled. Our present method of waste disposal consists of engaging the services of a commercial pumping company who in turn disposed of these wastes in the Los Angeles area."											
Progress Report	Unclear		4/15/1957	Industrial wastes			Report discusses the need for and the materials and volumes that would "go into an industrial waste dump should one be established" in the San Diego area. Anticipates that on an annual basis approximately 400,000 gallons of waste consisting of acid, toxic process solutions, and paint and oily wastes, per year can be expected from "Convair, Ryan, and Rohr aircraft companies" in the near future; <5,000 gallons of "planting companies" waste; 500 cubic yards (300 to 400 tons) of filter powder (diatomaceous earth) saturated with combustible cleaning solvents (from dry cleaners). The "most suitable dump locations would be" Fort Rosecrans, Border Field, Black Mountain, or Del Mar Mesa. Mission Bay was given a rating of extremely doubtful.				
Letter	Superintendent, Sewerage Division, via Acting Director of Public Works	City Manager	2/24/1958				Letter regarding establishment of an industrial waste dump site discusses "two tentatively acceptable" industrial waste sites in Kearny Mesa with a proposed plan of operation and an estimate of quantities of waste materials to be received (including paint and oil wastes, chronic acid, hydrofluoric acid, nitric acid, sulphuric acid, hydrochloric acid, dichromate, and cyanide).				
Disposal Report	Rohr Aircraft Corporation	-	11/6/1958	Nitrate acid, Hydrofluoric acid	2400?	gallons?	Waste was delivered to Mission Bay Sanitary Landfill				

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**Summary of Historical Documents Regarding Waste Disposal in San Diego**  
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Document Type	Source	Addressed to:	Date	Waste Type	Amount	Units	Comments
Letter	Leon R. Burton, Superintendent of Sanitation Division	Director of Public Works	7/17/1958				Report of additional fill areas in Mission Bay. Letter discusses that "it was indicated that the Mission Fill operation could only last from 6 months to one year due to dredging plans." Provides estimates of volumes of industrial waste acids and proposed disposal at Areas A, B, C, and D indicated on unattached map - unclear if any of these areas are MBLF.
Letter	Omar Rendering Company	County of San Diego, Board of Supervisors	1/12/1959				Discusses type of vehicle that was permitted to use highways for the purpose of transporting industrial waste particularly waste acids. States that Omar has a fleet of trucks that can properly dispose of waste and that manufacturers no longer need to use the sewer to dispose of acids.
Letter	Public Health Engineer County of San Diego	Director of Public Health County of San Diego	2/13/1959				States that studies for establishing industrial waste dumps were prepared over previous 18 months to 2 years, but in the meantime, "the city has been using the Mission Bay Sanitary Fill for disposal of industrial wastes which were of excessive strength and which could not be disposed of...into the city sewers." Further states that the city plans to establish a new sanitary fill operation in San Clemente Canyon, and that control over transportation of wastes over public highways should be established.
Letter	Dr. James Christie	Commandant Eleventh Naval District	8/3/1959				Complaint regarding "objectionable practices being conducted at the Mission Bay location. I have seen lots of dead animals being ground up by a tractor and powerful acids being disposed of..."
Letter	San Diego Regional Water Pollution Control Board	State Dept of Water Resources	8/27/1959				Acknowledges receipt of Report on Industrial Waste Disposal Site, Omar Rendering Company, Otay Valley. "The City of San Diego is anxious to terminate the Mission Bay sanitary fill operation within a matter of days, an action which will deprive the metropolitan area of its only presently operative Class I site. We would therefore appreciate receiving your further recommendations in the minimum time..."
Notes	Former Landfill Employee-Mission Bay Site (unsigned)		undated				Series of statements regarding observations of waste practices at Mission Bay.
Resolution 59-R15	San Diego Regional Water Pollution Control Board		unclear				Establishes the Omar Rendering Facility as a disposal site "...because of the imminent closing of the Mission Bay Sanitary Fill..." Summarizes anticipated amount of waste discharges at the Omar Rendering Company in the Otay Valley area. Anticipated amounts may be indicative of what went into MBLF. Wastes listed include chromic acid, mineral acid solutions, alkaline solution wastes, and carbide lime wastes.



**Table 5.6**  
**Landfill Gas Field Screening Results**  
**Methane, Carbon Dioxide, Oxygen, Nitrogen (Balance), Hydrogen Sulfide Concentrations**  
**Mission Bay Landfill**  
**San Diego, California**

Sample Number	Sample Depth (ftbg)	CH <sub>4</sub> (%)	CO <sub>2</sub> (%)	O <sub>2</sub> (%)	BAL (%)	H <sub>2</sub> S (ppm)
MB-1A	---	---	---	---	---	---
MB-2A	8	12.0	1.1	18.5	79.3	0
MB-3A	8	42.9	35.4	0.3	21.6	0.031
MB-4A	8	46.7	36.3	2.2	14.8	0.023
MB-1B	10	1.9	11.5	11.6	75.0	0.04
MB-2B	7	16.4	12.7	12.5	58.4	0.23
MB-3B	5	8.9	18.4	7.0	65.6	0.035
MB-4B	10	35.0	28.2	5.1	31.4	0.043
MB-1C	10	43.7	35.0	3.6	17.6	2.1
MB-2C	15	3.4	3.0	17.3	76.2	0.007
MB-3C	10	21.3	17.5	10.9	50.3	0.028
MB-4C	10	16.5	14.2	12.8	56.5	0.013
MB-1D	13	34.8	23.9	6.5	33.6	0.006
MB-2D	15	38.5	34.1	4.2	22.4	0.007
MB-3D	10	1.9	3.1	16.7	78.4	0
MB-1E	10	14.2	18.1	10.4	57.1	0.001
MB-2E	15	40.0	23.4	5.8	30.3	1.45
MB-3E	16.5	46.6	31.5	3.6	18.1	1.6
MB-1F	10	50.4	33.4	2.2	12.7	0.18
MB-2F	7	10.7	50.1	2.8	36.3	0.013
MB-3F	9	2.5	4.0	12.0	81.0	0.001
MB-1G	7	6.1	21.1	1.3	71.5	0.17
MB-2G	15	57.3	34.3	1.3	7.3	4.5
MB-3G	12	3.1	2.2	17.9	76.8	0.002
MB-1H	5	24.5	26.6	6.7	42.0	0.33
MB-2H	15	35.7	29.1	3.2	31.9	0.036
MB-1I	5	38.1	22.2	5.6	34.5	0.045
MB-2I	10	42.3	26.6	4.3	26.7	0.27
MB-1J	5	19.8	20.7	3.8	55.5	0.19
MB-2J	10	39.5	28.8	2.8	28.9	3.1
MB-1K	---	---	---	---	---	---
MB-2K	10	9.2	19.2	2.0	69.0	0.030
MB-1L	10	16.9	19.5	1.0	62.4	3.74
MB-2L	5	14.9	22.9	2.9	59.4	0.93
MB-3L	12	2.8	19.7	0.8	76.8	0.005
MB-1M	10	41.0	29.6	0.4	29.1	0.043
MB-2M	10	22.9	27.3	2.6	42.1	21.0
MB-3M	12	20.9	22.6	2.8	53.4	0.001
MB-4M	16	2.1	9.4	4.5	83.9	0.001
MB-1N	10	24.7	25.0	0.5	49.8	0.29
MB-2N	7	14.2	29.1	0.6	56.0	1.8
MB-3N	6.5	1.6	1.1	18.6	78.7	0
MB-4N	15	0.7	4.4	11.7	83.1	0
MB-1O	6.5	8.9	5.3	11.2	75.1	0.26
MB-2O	10	7.0	7.5	10.8	74.7	0.051
MB-3O	10	13.5	20.4	0.5	65.6	0.57
MB-4O	6	23.1	18.1	1.8	57.0	0.37
MB-1P	10	1.6	15.48	1.2	81.6	0.001
MB-2P	---	---	---	---	---	---

**Notes:**

1. CH<sub>4</sub> = methane, CO<sub>2</sub> = carbon dioxide, O<sub>2</sub> = oxygen, Balance = nitrogen (balance), H<sub>2</sub>S = hydrogen sulfide
2. Results presented in percentage (%) or parts per million (ppm).
3. Samples collected by SCS from May 25, 2004 to June 2, 2004.

**Table 5.7**  
**Landfill Gas Analytical Results**  
**Summary of LFG, Near-Surface, and Surface Emission Sampling Results**  
**Mission Bay Landfill**  
**San Diego, California**  
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Sample ID	Sample Type	LFG Sample Depths	Date Collected	Parameter:	Carbon dioxide	Carbon monoxide	Ethane	Methane	Nitrogen	Oxygen	Carbonyl sulfide	Dimethyl sulfide	Ethyl mercaptan	Hydrogen sulfide	Methyl mercaptan	Total Non-Methane Hydrocarbons as Methane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dibromoethane (EDB)		
				Method:	D1946	D1946	D1946	D1946	D1946	D1946	D1946	EPA 15/16	EPA 15/16	EPA 15/16	EPA 15/16	EPA 15/16	EPA 25C	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15
				Units:	%(v/v)	%(v/v)	%(v/v)	%(v/v)	%(v/v)	%(v/v)	ppm(v/v)	ppm(v/v)	ppm(v/v)	ppm(v/v)	ppm(v/v)	ppm(v/v)	ppm-c	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)
MB1-LFG	Landfill gas	10, 10, 5, 10, 7	5/25/2004	24	<0.0017	0.0015	31	37	7.7	<0.2	<0.2	<0.2	<0.2	<0.2	590	<17	<17	<17	<17	<17			
MB1-SUR	Near-Surface		5/25/2004	8.5	<0.0017	<0.00084	5.4	71	15	<0.2	<0.2	<0.2	<0.2	<0.2	88	<2	<2	<2	<2	<2			
MB2-LFG	Landfill gas	10, 16.5, 9, 15, 7	5/26/2004	16	<0.0018	<0.00092	17	54	14	<0.2	<0.2	<0.2	2.9	<0.2	890	<15	<15	<15	<15	<15			
MB2-SUR	Near-Surface		5/26/2004	0.33	<0.0019	<0.00095	0.013	79	22	<0.2	<0.2	<0.2	<0.2	<0.2	<57	<2	<2	<2	<2	<2			
MB3-LFG	Landfill gas	15, 15, 10	5/26/2004	9	<0.0023	<0.0012	12	63	18	<0.2	<0.2	<0.2	0.54	<0.2	110	<2	<2	<2	<2	<2			
MB3-SUR	Near-Surface		5/26/2004	2.4	<0.0022	<0.0011	2.1	77	20	<0.2	<0.2	<0.2	<0.2	<0.2	<65	<2	<2	<2	<2	<2			
MB4-LFG	Landfill gas	8, 8, 8, 10, 13	5/27/2004	4.7	<0.0018	<0.00088	6.5	70	19	<0.2	<0.2	<0.2	0.45	<0.2	83	<3.5	<3.5	<3.5	<3.5	<3.5			
MB4-SUR	Near-Surface		5/27/2004	5.6	<0.0018	<0.00088	6.8	70	19	<0.2	<0.2	<0.2	0.56	<0.2	82	<3.6	<3.6	<3.6	<3.6	<3.6			
MB5-LFG	Landfill gas	12, 15, 7, 10, 10	5/27/2004	5	<0.002	<0.00098	7.4	70	19	<0.2	<0.2	<0.2	1.6	<0.2	78	<3.9	<3.9	<3.9	<3.9	<3.9			
MB5-SUR	Near-Surface		5/27/2004	2.1	<0.0019	<0.00096	1.3	77	20	<0.2	<0.2	<0.2	0.47	<0.2	<58	<2	<2	<2	<2	<2			
MB6-LFG	Landfill gas	13, 10, 5, 5, 5	5/28/2004	28	<0.0018	0.0026	41	27	2.9	<0.2	<0.2	<0.2	1	<0.2	500	<3.6	<3.6	<3.6	<3.6	<3.6			
MB6-SUR	Near-Surface		5/28/2004	6	<0.0019	<0.00096	10	67	16	<0.2	<0.2	<0.2	0.37	<0.2	160	<2	<2	<2	<2	<2			
MB7-LFG	Landfill gas	10, 10, 5, 12	5/28/2004	25	<0.0019	<0.00096	21	53	1.1	<0.2	<0.2	<0.2	1	<0.2	360	<3.8	<3.8	<3.8	<3.8	<3.8			
MB7-SUR	Near-Surface		5/28/2004	15	<0.002	<0.00098	12	63	9	<0.2	<0.2	<0.2	<0.2	<0.2	190	<2	<2	<2	<2	<2			
MB8-LFG	Landfill gas	10, 12, 16, 10, 10	6/1/2004	21	<0.0018	<0.00088	21	54	1.5	<0.2	<0.2	<0.2	20	<0.2	920	<7.1	<7.1	<7.1	<7.1	<7.1			
MB8-SUR	Near-Surface		6/1/2004	4.5	<0.0018	<0.00092	2.8	74	17	<0.2	<0.2	<0.2	<0.2	<0.2	150	<2	<2	<2	<2	<2			
MB10-LFG	Landfill gas	6, 10, 10, 10	6/2/2004	15	<0.0021	<0.0011	12	68	4	<0.2	<0.2	<0.2	0.28	<0.2	450	<4.3	<4.3	<4.3	<4.3	<4.3			
MB10-SUR	Near-Surface		6/2/2004	1.3	<0.0021	<0.0011	0.018	78	20	<0.2	<0.2	<0.2	<0.2	<0.2	<63	<2	<2	<2	<2	<2			
MB9-LFG	Landfill gas	15, 6.5, 7, 10, 6.5	6/2/2004	15	<0.0019	<0.00094	18	58	9.6	<0.2	<0.2	<0.2	1.8	<0.2	870	<3.7	<3.7	<3.7	<3.7	<3.7			
MB9-SUR	Near-Surface		6/2/2004	8.9	<0.0019	<0.00097	5	73	13	<0.2	<0.2	<0.2	0.24	<0.2	170	<2	<2	<2	<2	<2			
GRID A1,B1-B4	Surface Emission	Above grade	6/8/2004	0.032	<0.001	<0.0005	<0.0005	79	23	<0.2	<0.2	<0.2	<0.2	<0.2	<30	<0.2	<0.2	<0.2	<0.2	<0.2			
GRID I1	Surface Emission	Above grade	6/8/2004	0.032	<0.001	<0.0005	<0.0005	79	23	<0.2	<0.2	<0.2	<0.2	<0.2	<30	<0.2	<0.2	<0.2	<0.2	<0.2			
GRID L2	Surface Emission	Above grade	6/8/2004	0.032	<0.001	<0.0005	<0.0005	79	23	<0.2	<0.2	<0.2	<0.2	<0.2	<30	<0.2	<0.2	<0.2	<0.2	<0.2			
J2c (COMPOSITE [J2a + J2b])	Surface Emission	Above grade	6/8/2004	0.032	<0.001	<0.0005	<0.0005	79	22	<0.2	<0.2	<0.2	<0.2	<0.2	<30	<0.2	<0.2	<0.2	<0.2	<0.2			
N1c (COMPOSITE [N1a + N1b])	Surface Emission	Above grade	6/8/2004	0.032	<0.001	<0.0005	<0.0005	79	23	<0.2	<0.2	<0.2	<0.2	<0.2	<30	<0.2	<0.2	<0.2	<0.2	<0.2			
N3c (COMPOSITE [N3a + N3b])	Surface Emission	Above grade	6/8/2004	0.033	<0.001	<0.0005	<0.0005	79	22	<0.2	<0.2	<0.2	<0.2	<0.2	<30	<0.2	<0.2	<0.2	<0.2	<0.2			
# HITS				26	0	2	20	26	26	26	0	0	0	13	0	16	0	0	0	0	0		
# SAMPLES				26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	
MAX				28	0	0.0026	41	79	23	0	0	0	20	0	920	0	0	0	0	0	0		
MIN				0.032	0	0.0015	0.013	27	1.1	0	0	0	0.24	0	78	0	0	0	0	0	0		

Notes:  
1. < indicates detection at less than the laboratory reporting limit.  
2. LFG sample depths in feet below grade.  
3. Results reported in units of parts per billion by volume in vapor (ppb(v/v)).

**Table 5.7**  
**Summary of LFG, Near-Surface, and Surface Emission Sampling Results**  
**Mission Bay Landfill**  
**San Diego, California**  
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Sample ID	Sample Type	LFG Sample Depths	Date Collected	Parameter:	1,2-Dichloro- benzene	1,2-Dichloro- ethane	1,2-Dichloro- propane	1,3-Dichloro- benzene	1,4-Dichloro- benzene	2-Butanone (MEK)	2-Propanol	4-Methyl-2- pentanone (MIBK)	Acetone	Acrylo- nitrile	Bromo- dichloro- methane	Carbon disulfide	Carbon tetra- chloride	Chloro- benzene	Chloro- difluoro- methane	Chloro- ethane			
				Method:	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15
				Units:	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)
MB1-LFG	Landfill gas	10, 10, 5, 10, 7	5/25/2004		<17	<17	<17	<17	58	<85	<85	<85	<85	<85	<17	<85	<17	36	<17	<34			
MB1-SUR	Near-surface		5/25/2004		2.6	<2	<2	<2	18	24	<10	<10	110	<10	2.6	<10	<2	<2	5.2	<4			
MB2-LFG	Landfill gas	10, 16.5, 9, 15, 7	5/26/2004		<15	<15	<15	<15	71	<73	<73	<73	<73	<73	<15	<73	<15	22	29	<29			
MB2-SUR	Near-surface		5/26/2004		<2	<2	<2	<2	4.7	28	<10	<10	140	<10	<2	<10	<2	<2	<2	<4			
MB3-LFG	Landfill gas	15, 15, 10	5/26/2004		<2	<2	<2	<2	6.5	<10	<10	<10	40	<10	<2	<10	<2	<2	8.4	<4			
MB3-SUR	Near-surface		5/26/2004		<2	<2	<2	<2	2.7	17	<10	<10	98	<10	<2	<10	<2	<2	2.6	<4			
MB4-LFG	Landfill gas	8, 8, 8, 10, 13	5/27/2004		<3.5	<3.5	<3.5	<3.5	<3.5	<18	<18	<18	28	<18	<3.5	<18	<3.5	<3.5	<3.5	<7			
MB4-SUR	Near-surface		5/27/2004		<3.6	<3.6	<3.6	<3.6	<3.6	<18	<18	<18	42	<18	<3.6	<18	<3.6	<3.6	<3.6	<7.1			
MB5-LFG	Landfill gas	12, 15, 7, 10, 10	5/27/2004		<3.9	<3.9	<3.9	<3.9	<3.9	<20	<20	<20	<20	<20	<3.9	<20	<3.9	<3.9	6.5	<7.8			
MB5-SUR	Near-surface		5/27/2004		<2	<2	<2	<2	<2	<10	<10	<10	30	<10	<2	<10	<2	<2	2.2	<4			
MB6-LFG	Landfill gas	13, 10, 5, 5, 5	5/28/2004		<3.6	<3.6	<3.6	<3.6	73	<18	<18	<18	65	<18	<3.6	<18	<3.6	15	<3.6	<7.2			
MB6-SUR	Near-surface		5/28/2004		<2	<2	<2	<2	32	10	<10	<10	51	<10	<2	<10	<2	5.1	<2	<4			
MB7-LFG	Landfill gas	10, 10, 5, 12	5/28/2004		<3.8	<3.8	<3.8	<3.8	8.1	<19	<19	<19	<19	<19	<3.8	<19	<3.8	22	6.5	<7.6			
MB7-SUR	Near-surface		5/28/2004		<2	<2	<2	<2	6.6	17	<10	<10	82	<10	<2	<10	<2	11	2.3	<4			
MB8-LFG	Landfill gas	10, 12, 16, 10, 10	6/1/2004		25	<7.1	<7.1	<7.1	130	<35	<35	<35	<35	<35	<7.1	<35	<7.1	21	230	<14			
MB8-SUR	Near-surface		6/1/2004		8.1	<2	<2	<2	58	18	<10	<10	83	<10	<2	<10	<2	4.5	86	<4			
MB10-LFG	Landfill gas	6, 10, 10, 10	6/2/2004		<4.3	<4.3	<4.3	<4.3	17	<21	<21	<21	39	<21	<4.3	<21	<4.3	6.2	23	<8.6			
MB10-SUR	Near-surface		6/2/2004		<2	<2	<2	<2	5.1	<10	<10	<10	34	<10	<2	<10	<2	<2	<2	<4			
MB9-LFG	Landfill gas	15, 6.5, 7, 10, 6.5	6/2/2004		29	<3.7	<3.7	<3.7	160	40	<19	<19	120	<19	<3.7	<19	<3.7	28	42	8.5			
MB9-SUR	Near-surface		6/2/2004		7.7	<2	<2	<2	91	12	13	<10	45	<10	<2	<10	<2	4.4	38	<4			
GRID A1,B1-B4	Surface Emission	Above grade	6/8/2004		<0.2	<0.2	<0.2	<0.2	<0.2	<1	14	<0.4	3.1	<5	<0.2	<1	<0.2	<0.2	<1	<0.4			
GRID I1	Surface Emission	Above grade	6/8/2004		<0.2	<0.2	<0.2	<0.2	<0.2	<1	12	<0.4	3.4	<5	<0.2	<1	<0.2	<0.2	<1	<0.4			
GRID L2	Surface Emission	Above grade	6/8/2004		<0.2	<0.2	<0.2	<0.2	<0.2	<1	17	<0.4	3.9	<5	<0.2	<1	<0.2	<0.2	<1	<0.4			
J2c (COMPOSITE [J2a + J2b])	Surface Emission	Above grade	6/8/2004		<0.2	<0.2	<0.2	<0.2	<0.2	<1	25	<0.4	5.3	<5	<0.2	2.1	<0.2	<0.2	<1	<0.4			
N1c (COMPOSITE [N1a + N1b])	Surface Emission	Above grade	6/8/2004		<0.2	<0.2	<0.2	<0.2	<0.2	<1	32	<0.4	7.6	<5	<0.2	3.5	<0.2	<0.2	<1	<0.4			
N3c (COMPOSITE [N3a + N3b])	Surface Emission	Above grade	6/8/2004		<0.2	<0.2	<0.2	<0.2	<0.2	<1	26	<0.4	7.3	<5	<0.2	3.2	<0.2	<0.2	<1	<0.4			
<b># HITS</b>					5	0	0	0	16	8	7	0	21	0	1	3	0	11	13	1			
<b># SAMPLES</b>					26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26		
<b>MAX</b>					29	0	0	0	160	40	32	0	140	0	2.6	3.5	0	36	230	8.5			
<b>MIN</b>					2.6	0	0	0	2.7	10	12	0	3.1	0	2.6	2.1	0	4.4	2.2	8.5			

- Notes:**
1. < indicates detection at less than the laboratory reporting limit.
  2. LFG sample depths in feet below grade.
  3. Results reported in units of parts per billion by volume in vapor (ppb(v/v)).

**Table 5.7**  
**Summary of LFG, Near-Surface, and Surface Emission Sampling Results**  
**Mission Bay Landfill**  
**San Diego, California**  
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Sample ID	Sample Type	LFG Sample Depths	Date Collected	Parameter:	Chloro- form	Chloro- methane	Dichloro- difluoro- methane	Dichloro- fluoro- methane	Ethanol	Ethyl- benzene	m- & p- Xylenes	Methylene chloride	n-Butane	n-Hexane	o-Xylene	Pentane	Propane	Tetrachloro- ethene	trans-1,2- Dichloro- ethene	Trichloro- ethene	Trichloro- fluoro- methane	Vinyl chloride			
				Method:	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15	TO-15
				Units:	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)
MB1-LFG	Landfill gas	10, 10, 5, 10, 7	5/25/2004	<17	<34	<17	<17	<210	200	69	<17	1500	470	<17	890	2900	<17	<17	<17	<17	<17	18			
MB1-SUR	Near-surface		5/25/2004	18	<4	2.9	<2	<25	9.9	4.2	<2	180	27	<2	72	350	<2	<2	<2	<2	<2	<2			
MB2-LFG	Landfill gas	10, 16.5, 9, 15, 7	5/26/2004	<15	<29	<15	<15	<180	350	220	<15	2100	260	35	700	4100	<15	<15	<15	<15	<15	39			
MB2-SUR	Near-surface		5/26/2004	<2	<4	<2	<2	<25	5.2	7.2	<2	27	2.9	2.9	7	60	<2	<2	<2	<2	<2	<2			
MB3-LFG	Landfill gas	15, 15, 10	5/26/2004	<2	<4	3.3	<2	<25	5.6	6.5	<2	550	160	3.8	190	1000	<2	<2	<2	<2	<2	<2			
MB3-SUR	Near-surface		5/26/2004	<2	<4	<2	<2	<25	<2	<2	<2	200	21	<2	72	370	<2	<2	<2	<2	<2	<2			
MB4-LFG	Landfill gas	8, 8, 8, 10, 13	5/27/2004	<3.5	<7	<3.5	<3.5	<44	7.5	8	<3.5	330	48	<3.5	120	620	<3.5	<3.5	<3.5	<3.5	<3.5	<3.5			
MB4-SUR	Near-surface		5/27/2004	<3.6	<7.1	<3.6	<3.6	62	<3.6	<3.6	<3.6	350	42	<3.6	130	600	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6			
MB5-LFG	Landfill gas	12, 15, 7, 10, 10	5/27/2004	<3.9	<7.8	<3.9	<3.9	<49	25	24	<3.9	800	60	9.8	230	1600	<3.9	<3.9	<3.9	<3.9	<3.9	5.7			
MB5-SUR	Near-surface		5/27/2004	<2	<4	<2	<2	<25	<2	<2	<2	150	5.3	<2	29	360	<2	<2	<2	<2	<2	<2			
MB6-LFG	Landfill gas	13, 10, 5, 5, 5	5/28/2004	<3.6	<7.2	<3.6	<3.6	<45	56	45	<3.6	4800	200	20	1500	11000	<3.6	<3.6	<3.6	<3.6	<3.6	20			
MB6-SUR	Near-surface		5/28/2004	<2	<4	<2	<2	<25	7.7	19	<2	1100	60	7.1	370	2000	<2	<2	<2	<2	<2	11			
MB7-LFG	Landfill gas	10, 10, 5, 12	5/28/2004	<3.8	<7.6	<3.8	<3.8	<48	13	16	<3.8	2200	180	6.6	730	4200	<3.8	<3.8	<3.8	<3.8	<3.8	16			
MB7-SUR	Near-surface		5/28/2004	<2	<4	<2	<2	<25	7.9	18	<2	1500	99	6.6	480	2600	<2	<2	<2	<2	<2	7.5			
MB8-LFG	Landfill gas	10, 12, 16, 10, 10	6/1/2004	<7.1	<14	190	11	<88	440	730	<7.1	1800	280	300	750	3100	<7.1	<7.1	9.1	<7.1	<7.1	56			
MB8-SUR	Near-surface		6/1/2004	<2	<4	110	2	30	190	150	<2	280	33	43	120	460	<2	<2	3.8	<2	<2	6			
MB10-LFG	Landfill gas	6, 10, 10, 10	6/2/2004	<4.3	<8.6	<4.3	<4.3	<54	14	14	<4.3	1600	250	7.2	770	2300	<4.3	<4.3	<4.3	<4.3	<4.3	8.7			
MB10-SUR	Near-surface		6/2/2004	<2	<4	<2	<2	<25	7.4	22	<2	6.8	<2	8.3	2.9	21	<2	<2	<2	<2	<2	<2			
MB9-LFG	Landfill gas	15, 6.5, 7, 10, 6.5	6/2/2004	<3.7	<7.5	7.2	<3.7	<47	810	380	<3.7	1200	220	210	550	2200	<3.7	<3.7	4	<3.7	<3.7	50			
MB9-SUR	Near-surface		6/2/2004	11	<4	49	<2	160	140	98	<2	640	89	49	240	1100	<2	<2	<2	<2	<2	13			
GRID A1,B1-B4	Surface Emission	Above grade	6/8/2004	<0.2	0.4	0.44	<1	4.3	0.36	1.9	<0.2	<0.4	<1	0.38	<1	<1	<0.2	<0.2	<0.2	<0.2	<0.4	<0.2			
GRID I1	Surface Emission	Above grade	6/8/2004	<0.2	0.54	0.51	<1	4	0.35	1.6	<0.2	<0.4	<1	0.54	<1	<1	<0.2	<0.2	<0.2	<0.2	<0.4	<0.2			
GRID L2	Surface Emission	Above grade	6/8/2004	<0.2	0.5	0.51	<1	5.3	0.24	1.1	<0.2	<0.4	<1	0.41	<1	<1	<0.2	<0.2	<0.2	<0.2	<0.4	<0.2			
J2c (COMPOSITE [J2a + J2b])	Surface Emission	Above grade	6/8/2004	<0.2	0.52	0.49	<1	24	0.33	1.4	0.54	<0.4	<1	0.5	<1	1.1	<0.2	<0.2	<0.2	<0.2	<0.4	<0.2			
N1c (COMPOSITE [N1a + N1b])	Surface Emission	Above grade	6/8/2004	<0.2	0.94	0.53	<1	33	0.32	1.3	0.72	<0.4	<1	0.51	<1	<1	<0.2	<0.2	<0.2	<0.2	<0.4	<0.2			
N3c (COMPOSITE [N3a + N3b])	Surface Emission	Above grade	6/8/2004	<0.2	0.61	0.52	<1	37	0.28	1.2	0.77	<0.4	<1	0.43	<1	<1	<0.2	<0.2	<0.2	<0.2	<0.4	<0.2			
<b># HITS</b>				2	6	12	2	9	23	23	3	20	19	20	20	21	0	0	3	0	0	12			
<b># SAMPLES</b>				26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26			
<b>MAX</b>				18	0.94	190	11	160	810	730	0.77	4800	470	300	1500	11000	0	0	9.1	0	0	56			
<b>MIN</b>				11	0.4	0.44	2	4	0.24	1.1	0.54	6.8	2.9	0.38	2.9	1.1	0	0	3.8	0	0	5.7			

- Notes:**  
1. < indicates detection at less than the laboratory reporting limit.  
2. LFG sample depths in feet below grade.  
3. Results reported in units of parts per billion by volume in vapor (ppb(v/v)).

**Table 5.8**  
**Methane, Carbon Dioxide, Oxygen, Nitrogen (Balance), Hydrogen Sulfide**  
**Near-Surface Landfill Gas Field Measurements**  
**Mission Bay Landfill**  
**San Diego, California**

Sample Number	CH <sub>4</sub> (%)	CO <sub>2</sub> (%)	O <sub>2</sub> (%)	BAL (%)	H <sub>2</sub> S (ppm)
MB-1A	---	---	---	---	---
MB-2A	9.2	7.3	15.4	68.1	0.004
MB-3A	27.2	28.8	2.3	41.5	0.024
MB-4A	<b>43.6</b>	<b>34.9</b>	2.4	19.1	0.57
MB-1B	1.9	0.9	18.2	81.0	0.003
MB-2B	13.2	13.7	11.0	62.0	0.006
MB-3B	5.7	12.8	9.2	72.1	0.038
MB-4B	0.0	6.0	13.8	80.3	0.002
MB-1C	15.2	15.2	9.8	59.8	0.02
MB-2C	0.0	2.7	16.3	81.0	0.004
MB-3C	12.9	10.2	13.3	63.5	0.001
MB-4C	0.0	0.3	19.0	80.8	0.001
MB-1D	0.0	0.1	19.2	80.6	0
MB-2D	0.2	1.3	16.3	82.3	0.002
MB-3D	0.0	2.0	17.5	80.5	0.001
MB-1E	0.0	0.0	19.2	80.7	0
MB-2E	0.0	0.5	15.8	83.7	0.002
MB-3E	0.4	0.4	19.4	79.8	0.002
MB-1F	0.5	18.6	24.4	9.6	0.9
MB-2F	0.0	0.1	18.7	81.2	0.003
MB-3F	0.0	1.2	17.9	80.8	0
MB-1G	5.8	20.5	1.7	72.0	0.02
MB-2G	2.0	1.9	18.4	77.8	0.001
MB-3G	0.0	0.2	19.6	80.3	0.002
MB-1H	24.5	26.6	6.7	42.0	0.33
MB-2H	4.4	15.3	19.3	80.2	0.002
MB-1I	36.0	19.5	6.2	38.1	1.8
MB-2I	0.0	0.1	19.1	80.7	0
MB-1J	1.4	3.3	16.3	79.5	0.002
MB-2J	28.6	26.7	3.4	41.3	0.11
MB-1K	---	---	---	---	---
MB-2K	4.7	16.3	3.4	75.5	0.008
MB-1L	0.1	1.3	18.4	80.3	0
MB-2L	13.2	23.4	2.4	60.8	0.14
MB-3L	0.0	2.2	17.2	80.3	0.001
MB-1M	2.9	18.8	1.5	77.0	0.06
MB-2M	0.0	9.3	10.1	80.6	0.02
MB-3M	20.9	22.6	2.8	53.4	0.001
MB-4M	0.0	0.5	18.5	81.0	0.001
MB-1N	22.7	20.7	1.5	55.2	0.3
MB-2N	0.0	11.5	10.2	78.3	0.11
MB-3N	14.4	10.3	11.0	64.7	0.39
MB-4N	0.0	0.5	18.7	80.8	0
MB-1O	0.0	0.0	18.8	80.8	0.002
MB-2O	0.0	0.2	19.0	80.8	0.001
MB-3O	0.0	1.7	16.5	81.7	0.011
MB-4O	0.0	0.3	18.7	81.0	0.008
MB-1P	0.0	2.8	15.9	81.2	0.009
MB-2P	----	---	---	---	---

**Notes:**

1. **Bold** indicates percentage of methane and carbon dioxide greater than 40% and 30%, respectively, and concentrations of H<sub>2</sub>S greater than 1ppm.
2. CH<sub>4</sub> = methane, CO<sub>2</sub> = carbon dioxide, O<sub>2</sub> = oxygen, Balance = nitrogen (balance), H<sub>2</sub>S = hydrogen sulfide
3. Results presented in percentage (%) or parts per million (ppm).
4. Samples collected by SCS from May 25, 2004 to June 2, 2004.

**Table 5.9**  
**Additional LFG Sampling Results**  
**Mission Bay Landfill**  
**San Diego, California**

<b>Sample ID</b>	<b>Benzene</b> µg/L	<b>Ethylbenzene</b> µg/L	<b>Freon 113</b> µg/L	<b>Vinyl Chloride</b> µg/L
LFG2-L1	0.8	<1	<1	0.3
LFG2-M1	0.5	2.1	<1	0.2
LFG2-L2	0.4	1.5	<1	0.08
LFG2-L3	0.3	1.5	<1	2.8
LFG2-M3	7.8	<1	<1	0.3
LFG2-M4	0.1	<1	<1	<0.05
LFG2-O4	0.4	<1	<1	0.1
LFG2-N4	0.5	<1	<1	0.1
LFG2-N3	0.7	<1	1.2	0.1
LFG2-N2	0.9	1.9	<1	0.5
LFG2-M2	0.6	6.0	<1	0.2
LFG2-N1	1.2	<1	<1	<0.05
LFG2-O1	0.9	<1	<1	0.1
LFG2-E2	0.2	<1	1.7	<0.05

**Notes:**

1. < indicates detection at less than the laboratory reporting limit.
2. No detectable concentrations were reported for any of the other analytes.
3. Samples collected by SCS Engineers on July 21, 2004.
4. Landfill gas samples analyzed in general accordance with EPA Method 8260B.
5. Results reported in micrograms per liter (µg/L).

**Table 5.10**  
**Projected LFG and NMOC Generation Rates**  
**Mission Bay Landfill**  
**San Diego, California**

Year	Disposal Rate (tons/yr)	Refuse In-Place (tons)	Disposal Rate (Mg/yr)	Refuse In-Place (Mg)	Methane Generation Rates (m <sup>3</sup> /yr)	LFG Generation Rates (cfm) (Million ft <sup>3</sup> /yr)	NMOC Generation Rates (tons/yr)	NMOC Generation Rates (Mg/yr)
1952	75,000	0	68,039	0	0.000E+00	0	0	0
1953	150,000	75,000	136,078	68,039	5.783E+05	78	41	18
1954	150,000	225,000	136,078	204,117	1.707E+06	229	121	53
1955	150,000	375,000	136,078	340,194	2.780E+06	374	196	86
1956	150,000	525,000	136,078	476,272	3.801E+06	511	268	118
1957	150,000	675,000	136,078	612,350	4.773E+06	641	337	148
1958	150,000	825,000	136,078	748,427	5.696E+06	765	402	177
1959	150,000	975,000	136,078	884,505	6.575E+06	884	464	204
1960	0	1,125,000	0	1,020,583	7.411E+06	996	523	230
1961	0	1,125,000	0	1,020,583	7.050E+06	947	498	219
1962	0	1,125,000	0	1,020,583	6.706E+06	901	474	208
1963	0	1,125,000	0	1,020,583	6.379E+06	857	451	198
1964	0	1,125,000	0	1,020,583	6.068E+06	815	429	189
1965	0	1,125,000	0	1,020,583	5.772E+06	776	408	179
1966	0	1,125,000	0	1,020,583	5.490E+06	738	388	171
1967	0	1,125,000	0	1,020,583	5.223E+06	702	369	162
1968	0	1,125,000	0	1,020,583	4.968E+06	668	351	154
1969	0	1,125,000	0	1,020,583	4.726E+06	635	334	147
1970	0	1,125,000	0	1,020,583	4.495E+06	604	317	140
1971	0	1,125,000	0	1,020,583	4.276E+06	575	302	133
1972	0	1,125,000	0	1,020,583	4.067E+06	547	287	126
1973	0	1,125,000	0	1,020,583	3.869E+06	520	273	120
1974	0	1,125,000	0	1,020,583	3.680E+06	495	260	114
1975	0	1,125,000	0	1,020,583	3.501E+06	470	247	109
1976	0	1,125,000	0	1,020,583	3.330E+06	447	235	104
1977	0	1,125,000	0	1,020,583	3.168E+06	426	224	98
1978	0	1,125,000	0	1,020,583	3.013E+06	405	213	94
1979	0	1,125,000	0	1,020,583	2.866E+06	385	202	89
1980	0	1,125,000	0	1,020,583	2.726E+06	366	193	85
1981	0	1,125,000	0	1,020,583	2.593E+06	349	183	81
1982	0	1,125,000	0	1,020,583	2.467E+06	332	174	77
1983	0	1,125,000	0	1,020,583	2.347E+06	315	166	73
1984	0	1,125,000	0	1,020,583	2.232E+06	300	158	69
1985	0	1,125,000	0	1,020,583	2.123E+06	285	150	66
1986	0	1,125,000	0	1,020,583	2.020E+06	271	143	63
1987	0	1,125,000	0	1,020,583	1.921E+06	258	136	60
1988	0	1,125,000	0	1,020,583	1.828E+06	246	129	57
1989	0	1,125,000	0	1,020,583	1.738E+06	234	123	54
1990	0	1,125,000	0	1,020,583	1.654E+06	222	117	51
1991	0	1,125,000	0	1,020,583	1.573E+06	211	111	49
1992	0	1,125,000	0	1,020,583	1.496E+06	201	106	47
1993	0	1,125,000	0	1,020,583	1.423E+06	191	101	44
1994	0	1,125,000	0	1,020,583	1.354E+06	182	96	42
1995	0	1,125,000	0	1,020,583	1.288E+06	173	91	40
1996	0	1,125,000	0	1,020,583	1.225E+06	165	87	38
1997	0	1,125,000	0	1,020,583	1.165E+06	157	82	36
1998	0	1,125,000	0	1,020,583	1.108E+06	149	78	34
1999	0	1,125,000	0	1,020,583	1.054E+06	142	74	33
2000	0	1,125,000	0	1,020,583	1.003E+06	135	71	31
2001	0	1,125,000	0	1,020,583	9.541E+05	128	67	30
2002	0	1,125,000	0	1,020,583	9.076E+05	122	64	28
2003	0	1,125,000	0	1,020,583	8.633E+05	116	61	27
2004	0	1,125,000	0	1,020,583	8.212E+05	110	58	26
2005	0	1,125,000	0	1,020,583	7.811E+05	105	55	24
2006	0	1,125,000	0	1,020,583	7.430E+05	100	52	23
2007	0	1,125,000	0	1,020,583	7.068E+05	95	50	22
2008	0	1,125,000	0	1,020,583	6.723E+05	90	47	21
2009	0	1,125,000	0	1,020,583	6.395E+05	86	45	20
2010	0	1,125,000	0	1,020,583	6.084E+05	82	43	19
2011	0	1,125,000	0	1,020,583	5.787E+05	78	41	18
2012	0	1,125,000	0	1,020,583	5.505E+05	74	39	17

ESTIMATED NMOC CONCENTRATION IN LFG: 4000 ppmv  
ASSUMED METHANE CONTENT OF LFG: 50%  
SELECTED DECAY RATE CONSTANT: 0.05  
SELECTED ULTIMATE METHANE RECOVERY RATE: 5,446 ft<sup>3</sup>/ton  
METRIC EQUIVALENT: 170 cu m/Mg

**Conversions:** 35.314667 cu ft per cu m  
1.1023113 ton per Mg  
32.037 cu ft/ton per cu m/Mg

**Table 5.12**  
**Soil Boring Soil Sample Analytical Results**  
**Semivolatile Organic Compounds, Title 22 Metals, and Hexavalent Chromium**  
**Mission Bay Landfill**  
**San Diego, California**  
(Page 1 of 2)

Analytes	CHHSL <sup>7</sup> (mg/kg)	Sample Number											
		B1-9'	B1-12'	B2-8'	B2-14'	B6-5.5'	B6-10'	B7-3.5'	B7-9'	B9-9'	B10-6'	B10-10'	B10-20'
<b>METALS (mg/kg)</b>													
Antimony	380.0	<0.50	0.71	<0.50	0.87	0.69	<0.50	0.83	0.69	0.67	<0.50	<0.50	<0.50
Arsenic	0.24	<b>&lt;0.25</b>	<b>4.20</b>	<b>2.63</b>	<b>3.98</b>	<b>3.70</b>	<b>&lt;0.25</b>	<b>0.35</b>	<b>1.83</b>	<b>2.31</b>	<b>3.55</b>	<b>5.06</b>	<b>1.80</b>
Barium	63,000.0	83.3	132	47.5	190	157	42.6	139	151	211	84.7	133	61.7
Beryllium	1,700.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Cadmium	7.5	<0.50	0.67	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.65	<0.50
Chromium	100,000.0	21.9	35.3	11.7	32.0	28.2	7.5	21.8	24.5	33.1	17.8	38.2	17.9
Cobalt	3,200.0	7.03	20.7	5.82	13.8	12.0	3.36	9.1	13.8	22.7	6.96	17.1	5.78
Copper	38,000.0	17.9	26.7	11.4	23.6	15.6	3.36	12.0	11.6	27.0	16.4	31.8	11.9
Lead	3,500.0	4.28	6.0	10.9	3.84	3.56	0.63	6.04	1.74	3.93	20.8	6.81	17.1
Mercury	180.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Molybdenum	4,800.0	0.92	1.57	<0.50	1.23	0.66	<0.50	<0.50	<0.50	<0.50	<0.50	2.78	0.59
Nickel	16,000.0	7.91	17.3	8.97	14.1	12.0	3.39	8.8	13.1	17.4	10.1	18.2	11.2
Selenium	4,800.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	4,800.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Thallium	63.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Vanadium	6,700.0	41.9	59.8	26.8	66.2	63.0	16.8	42.5	45.9	73.8	42.1	90.5	33.6
Zinc	100,000.0	36.7	56.1	33.7	53.5	47.9	11.0	42.9	46.2	73.4	44.2	64.0	46.5
<b>HEXAVALENT CHROMIUM (mg/kg)</b>													
Hexavalent Chromium	37.0	NA	NA	NA	0.13	NA	<0.100	NA	NA	NA	NA	<0.100	NA

**Table 5.12**  
**Soil Boring Soil Sample Analytical Results**  
**Semivolatile Organic Compounds, Title 22 Metals, and Hexavalent Chromium**  
**Mission Bay Landfill**  
**San Diego, California**  
(Page 2 of 2)

Analytes	CHHSL <sup>7</sup> (mg/kg)	Sample Number											
		B12-5.5'	B12-10'	B13-8'	B13-14'	B14-12'	B14-16'	B15-7.5'	B15-11'	B16-12'	B16-16'	B18-20'	B18-25'
<b>METALS (mg/kg)</b>													
Antimony	380.0	<0.50	<0.50	1.25	<0.50	<0.50	1.11	<0.50	<0.50	<0.50	<0.50	<0.50	0.82
Arsenic	0.24	<b>2.25</b>	<b>6.71</b>	<b>2.06</b>	<b>4.82</b>	<b>49.9</b>	<b>&lt;0.25</b>	<b>&lt;0.25</b>	<b>&lt;0.25</b>	<b>2.71</b>	<b>&lt;0.25</b>	<b>&lt;0.25</b>	<b>&lt;0.25</b>
Barium	63,000.0	25.6	110	361	107	45.5	148	26.8	50.9	79.5	175	58.2	213
Beryllium	1,700.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Cadmium	7.5	<0.50	<0.50	<0.50	<0.50	1.08	<0.50	<0.50	<0.50	<0.50	0.65	<0.50	<0.50
Chromium	100,000.0	5.21	32.5	44.9	26.6	240	18.3	5.1	10.8	12.6	25.7	8.69	29.3
Cobalt	3,200.0	3.18	12.8	21.3	10.3	28.9	5.27	2	4.36	5.81	12.6	4.47	12.7
Copper	38,000.0	5.31	27.4	20.6	16.5	275	510	1.95	4.17	10.7	38.9	3.44	16.5
Lead	3,500.0	23.2	6.87	2.79	4.08	594	29.1	0.6	0.49	17.7	1.98	<0.25	1.41
Mercury	180.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Molybdenum	4,800.0	<0.50	1.53	<0.50	0.53	38.4	2.22	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	16,000.0	5.19	15.7	18.2	12.3	231	53.4	2.17	4.67	7.54	12.9	4.15	13.5
Selenium	4,800.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	4,800.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Thallium	63.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Vanadium	6,700.0	12.8	87.5	83.8	49.3	11	28.8	13.1	17.6	26.6	58.5	30	76
Zinc	100,000.0	26.2	53.6	84.3	49.7	811	224	7.08	17.4	36.5	57.2	14.6	53.9
<b>HEXAVALENT CHROMIUM (mg/kg)</b>													
Hexavalent Chromium	37.0	NA	NA	NA	NA	NA	NA	NA	NA	<0.10	NA	0.21	0.17

**Notes:**

1. All of the soil samples were analyzed for semivolatile organic compounds (SVOCs) in general accordance with EPA Method 8270C, Title 22 Metals in general accordance with EPA Method 6010B/7470A, and hexavalent Chromium in general accordance with EPA Method 7199.
2. Reported concentrations of SVOCs were below the respective laboratory detection limits in all samples.
3. Results presented in table above reported in milligrams per kilogram (mg/kg).
4. NA = not analyzed.
5. Samples collected by SCS Engineers on June 16 and 17, 2004, August 9 and 10, 2004, and October 14, 2004.
6. <# - Sample result reported as less than the indicated laboratory detection limit for the analytical method used.
7. (7) California Human Health Screening Level (CHHSL) for commercial/industrial land use. Values given in mg/kg.
8. A reported concentration of an analyte in **boldface** denotes an exceedance of the applicable CHHSL.

**Table 5.13**  
**Soil Boring Groundwater Sample Analytical Results**  
**Volatile Organic Compounds, Semivolatile Organic Compounds, Hexavalent Chromium, and Conventional Water Quality Parameters**  
**Mission Bay Landfill**  
**San Diego, California**

Analytes	PHG <sup>7</sup> (µg/L)	Ocean Plan <sup>8</sup> (µg/L)	PRG <sup>9</sup> (µg/L)	Sample Number												
				B1-GW	B2-GW	B6-GW	B7-GW	B9-GW	B10A-GW	B12A-GW	B13-GW	B14-GW	B15-GW	B16-GW	B17-GW	B18-GW
<b>VOCs (µg/L)</b>																
Benzene	<b>0.15</b>	5.9	0.35	<b>2.5</b>	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<b>5.4</b>	<1.00	<b>2.9</b>	<b>4.2</b>	<1.00
Chlorobenzene	200.0	570.0	<b>106.07</b>	5.2	<1.00	<1.00	<1.00	<1.00	1.3	<1.00	<1.00	4.0	<1.00	<1.00	10.2	<1.00
Ethylbenzene	<b>300.0</b>	4,100.0	1,339.87	2.4	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	3.2	<1.00	7.5	8.7	<1.00
1,4-Dichlorobenzene	6.0	18.0	<b>0.50</b>	<b>2.8</b>	<1.00	<1.00	<1.00	<1.00	<b>4.5</b>	<1.00	<1.00	<b>2.2</b>	<1.00	<b>2.6</b>	<b>8.3</b>	<b>3.1</b>
Isopropylbenzene	NS	NS	<b>658.20</b>	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	3.3	1.6	<1.00
Naphthalene	NS	NS	NS	9.7	<1.00	<1.00	<1.00	<1.00	1.6	<1.00	<1.00	8.0	<1.00	15.4	24.6	<1.00
1,2,4-Trimethylbenzene	NS	NS	<b>12.33</b>	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	5.4	2.3	<1.00
Total Xylenes	1,800.0	NS	<b>205.73</b>	1.7	<3.00	<3.00	<3.00	<3.00	1.0	<3.00	<3.00	<3.00	<3.00	7.2	10.7	<3.00
<b>SVOCs (µg/L)</b>																
Bis(2-ethylhexyl) phthalate	NS	<b>3.5</b>	4.80	<10	<10	<10	<b>40.2</b>	<10	<10	<10	<10	<10	<10	<b>11.8</b>	<10	<10
Pentachlorophenol	<b>0.4</b>	NS	0.56	<1.0	<1.0	<1.0	<1.0	<1.0	<b>2.94</b>	<1.0	<1.0	<1.0	<1.0	<1.0	<b>7.85</b>	<1.0
<b>HEXAVALENT CHROMIUM (µg/L)</b>																
Hexavalent Chromium	NS	<b>2.0</b>	109.50	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
<b>CONVENTIONAL WATER QUALITY PARAMETERS (Units specified)</b>																
Conductivity (umho/cm @ 77°F)	NS	NS	NS	38,900	41,200	39,800	20,600	22,000	53,400	75,200	84,000	52.5	63,200	94,000	39,900	31,200
Hardness (Ca, Mg) as CaCO <sub>3</sub> (mg/L)	NS	NS	NS	4,300	4,000	3,700	2,100	2,400	6,000	8,800	6,400	3,900	7,200	9,500	2,500	3,100
pH	NS	NS	NS	7.06	7.21	7.17	7.12	7.03	6.73	6.88	6.86	6.91	7.24	6.72	7.15	6.94
Total Dissolved Solids (mg/L)	NS	NS	NS	24,800	26,300	25,300	12,800	13,600	34,700	50,800	64,000	33,700	44,100	63,800	24,200	18,800
Chloride (mg/L)	NS	NS	NS	11,100	12,400	11,900	5,940	6,500	18,200	27,400	21,200	17,800	21,700	35,800	12,500	9,800
Fluoride (mg/L)	NS	NS	NS	<0.10	<0.10	0.54	1.08	1.3	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.88	0.92
Nitrate as N (mg/L)	NS	NS	NS	0.48	<0.10	<0.10	<0.10	<0.10	0.5	0.5	0.2	1.3	0.3	1.1	1	<0.10
Sulfate (mg/L)	NS	NS	NS	46.7	29.3	12.2	625	308	311	1,290	247	220	1,570	25.1	134	756
Alkalinity, Total (mg/L)	NS	NS	NS	4,000	3,200	3,800	2,700	3,000	1,990	2,000	2,290	2,310	2,800	2,700	2,400	1,300
Bicarbonate (mg/L)	NS	NS	NS	4,000	3,200	3,800	2,700	3,000	1,990	2,000	2,290	2,310	2,800	2,700	2,400	1,300
Carbonate (mg/L)	NS	NS	NS	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hydroxide (mg/L)	NS	NS	NS	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

**Notes:**

1. All of the groundwater samples were analyzed for volatile organic compounds (VOCs) in general accordance with EPA Method 8260, semivolatile organic compounds (SVOCs) in general accordance with EPA Method 8270C, and hexavalent chromium in general accordance with EPA Method 719
2. EPA Methods for the conventional water quality parameters are as follows: conductivity (120.1), hardness (130.2), pH (150.1), TDS (160.1), chloride/fluoride/nitrate/sulfate (300), alkalinity/bicarbonate/carbonate/hydroxide (310.1).
3. Results presented in table above are reported in micrograms per liter (µg/L) unless otherwise noted.
4. Samples collected by SCS Engineers on June 16 and 17, 2004, August 9 and 10, 2004, and October 13, 2004.
5. <# - Sample result reported as less than the indicated laboratory detection limit for the analytical method used.
6. NS = No Standard available
7. (7) Office of Environmental Health Hazard Assessment Public Health Goals for **Drinking Water**.
8. (8) California State Water Resources Control Board 2001, Ocean Plan: 6-month median.
9. (9) United States Environmental Protection Agency Region 9 Preliminary Remediation Goals for **Tap Water**.
10. NA = Not applicable
11. The water quality criterion in **boldface** denotes the most stringent of the three (PHGs, Ocean Plan, and PRGs).
12. A reported concentration of an analyte in **boldface** denotes an exceedance of the most stringent water quality criterion.

**Table 5.14**  
**Surface Soil Sample Analytical Results**  
**Volatile Organic Compounds, Semivolatile Organic Compounds, Title 22 Metals, Hexavalent Chromium,**  
**Total Cyanide, Chlorinated Herbicides, Organochlorine Pesticides, Polychlorinated Biphenyls, and Polyaromatic Hydrocarbons**  
**Mission Bay Landfill**  
**San Diego, California**

Analytes	CHHSL <sup>8</sup> (mg/kg)	Sample Number									
		S1-12"	S2-6"	S3-8"	S4-8"	S5-6"	S6-8"	S7-6"	S8-4"	S9-12"	S10-12"
<b>METALS (mg/kg)</b>											
Antimony	380.0	1.06	<0.50	<0.50	<0.50	1.45	1.13	<0.50	0.85	<0.50	<0.50
Arsenic	0.24	<b>1.29</b>	<b>1.53</b>	<b>4.27</b>	<b>5.2</b>	<b>0.65</b>	<b>0.79</b>	<b>1.4</b>	<b>2.18</b>	<b>&lt;0.25</b>	<b>&lt;0.25</b>
Barium	63,000.0	88.2	20.6	55.6	90.5	55.7	81	417	72.9	15.4	12.1
Beryllium	1,700.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Cadmium	7.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chromium	100,000.0	17.5	4.48	14.6	7.25	26.8	20.3	15.8	19.3	4.76	3.65
Cobalt	3,200.0	7.16	2.34	8.76	3.97	8.97	7.46	8.43	6.71	1.7	1.24
Copper	38,000.0	9.76	3.35	16	6.41	12.5	9.1	8.55	9.77	1.19	0.76
Lead	3,500.0	7.2	9.34	12.6	9.05	4.48	4.13	17.9	6.65	0.54	0.59
Mercury	180.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Molybdenum	4,800.0	0.66	<0.50	<0.50	<0.50	1.58	0.58	<0.50	0.53	<0.50	<0.50
Nickel	16,000.0	7.74	3.24	13.4	6.18	11.8	9.01	9.89	7.28	1.89	1.47
Selenium	4,800.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	4,800.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Thallium	63.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Vanadium	6,700.0	37.8	10.8	29.4	22	72.1	47.6	55	37.1	9.2	6.55
Zinc	100,000.0	28.7	19.2	56.6	29.1	37.6	33.1	40.1	27.6	7.12	5.95
<b>HEXAVALENT CHROMIUM (mg/kg)</b>											
Hexavalent Chromium	37.0	0.38	0.24	0.36	0.25	0.15	0.33	0.31	0.75	0.28	0.33
<b>VOCs (µg/kg)</b>											
Acetone	NS	<50	147	<50	<50	<50	<50	<50	<50	<50	<50
<b>PAHs (µg/kg)</b>											
Benzo(b)fluoranthene	NS	<2.00	3	<2.00	<2.00	<2.00	<2.00	24	3	<2.00	<2.00
Chrysene	NS	<5.00	<5.00	28	<5.00	<5.00	<5.00	20	<5.00	<5.00	<5.00

**Notes:**

1. All of the soil samples were analyzed for **semivolatile organic compounds** (SVOCs) in general accordance with EPA Method 8270C. None of the samples had concentrations reported above the laboratory detection limits for each analyte.
2. All of the samples were analyzed for **total cyanide** in general accordance with EPA Method 9014. None of the samples had total cyanide greater than the laboratory detection limit (PQL) of 2.50 milligrams per kilogram (mg/kg)
3. All of the samples were analyzed for **chlorinated herbicides** in general accordance with EPA Method 8151A. None of the samples had concentrations greater than the laboratory detection limits (PQLs) ranging from 0.60 to 200 micrograms per kilogram µ g/kg).
4. All of the samples were analyzed for **organochlorine pesticides** in general accordance with EPA Method 8081A. None of the samples had concentrations greater than the laboratory detection limits for each analyte.
5. All of the samples were analyzed for **polychlorinated biphenyls** (PCBs) in general accordance with EPA Method 8082. None of the samples had concentrations greater than the laboratory detection limits for each analyte.
6. All of the samples were analyzed for California Code of Regulations (CCR) **Title 22 Metals** and **hexavalent chromium** in general accordance with EPA Method 6010B/7471A and EPA Method 7199, respectively. Results for metals reported in mg/kg.
7. Results for **volatile organic compounds** (VOCs) (EPA Method 8260B) and **polyaromatic hydrocarbons** (PAHs) (EPA Method 8310) reported in µ g/kg.
8. (8) California Human Health Screening Level for commercial/industrial land use. Values given in mg/kg.
9. NS = No standard
10. Samples collected by SCS Engineers on July 28, 2004.
11. <# - Sample result reported less than the laboratory detection limit for the respective analyte.
12. A reported concentration of an analyte in **boldface** denotes an exceedance of the applicable CHHSL.

**Table 5.16**  
**Sediment Sample Analytical Results**  
**Volatile Organic Compounds, Semivolatile Organic Compounds, Title 22 Metals, Hexavalent Chromium,**  
**Total Cyanide, Chlorinated Herbicides, Organochlorine Pesticides, Polychlorinated Biphenyls, and Polyaromatic Hydrocarbons**  
**Mission Bay Landfill**  
**San Diego, California**

Analytes	CHHSL <sup>9</sup> (mg/kg)	Sample Number				
		SEDIMENT 1	SEDIMENT 2	SEDIMENT 3	SEDIMENT 4	SEDIMENT 5
<b>METALS (mg/kg)</b>						
Antimony	380.0	<0.5	<0.5	0.56	<0.5	<0.5
Arsenic	0.24	<b>&lt;0.25</b>	<b>&lt;0.25</b>	<b>0.29</b>	<b>6.39</b>	<b>1.43</b>
Barium	63,000.0	9.18	35.5	82.4	98.6	22.1
Beryllium	1,700.0	<0.5	<0.5	<0.5	0.98	<0.5
Cadmium	7.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	100,000.0	2.93	7.89	13.4	15.3	7.06
Cobalt	3,200.0	0.99	3.1	5.6	17	3.49
Copper	38,000.0	2.03	5.15	9.58	27.3	15.3
Lead	3,500.0	0.59	0.33	20.7	87.7	20.1
Mercury	180.0	<0.20	<0.20	<0.20	<0.20	<0.20
Molybdenum	4,800.0	<0.50	0.66	<0.50	2.27	0.68
Nickel	16,000.0	1.29	3.35	6.47	17.1	5.3
Selenium	4,800.0	<0.5	<0.5	<0.5	<0.5	<0.5
Silver	4,800.0	<0.5	<0.5	<0.5	<0.5	<0.5
Thallium	63.0	<0.5	<0.5	<0.5	<0.5	<0.5
Vanadium	6,700.0	5.18	16.5	29.7	32.2	16
Zinc	100,000.0	7.04	19.8	139	139	56.7
<b>HEXAVALENT CHROMIUM (mg/kg)</b>						
Hexavalent Chromium	37.0	0.13	<0.100	0.13	0.27	0.12
<b>PAHs (µg/kg)</b>						
Acenaphthene	NS	380	<100	<100	<500	<500
Anthracene	NS	2	<2	<2	<10	<10
Naphthalene	NS	71	<50	<50	<250	<250
Fluoranthene	NS	<5	<5	<5	<25	30
Phenanthrene	NS	8	6	<4	<20	40
Pyrene	NS	<10	<10	<10	120	130

**Notes:**

1. All of the sediment samples were analyzed for **semivolatile organic compounds** (SVOCs) in general accordance with EPA Method 8270C. None of the samples had concentrations reported above the laboratory detection limits for each analyte.
2. All of the samples were analyzed for **total cyanide** in general accordance with EPA Method 9014. None of the samples had total cyanide greater than the laboratory detection limit (PQL) of 2.50 milligrams per kilogram (mg/kg).
3. All of the samples were analyzed for **chlorinated herbicides** in general accordance with EPA Method 8151A. None of the samples had concentrations greater than the laboratory detection limits (PQLs) ranging from 0.60 to 200 micrograms per kilogram ( $\mu$  g/kg).
4. All of the samples were analyzed for **organochlorine pesticides** in general accordance with EPA Method 8081A. None of the samples had concentrations greater than the laboratory detection limits for each analyte.
5. All of the samples were analyzed for **polychlorinated biphenyls** (PCBs) in general accordance with EPA Method 8082. None of the samples had concentrations greater than the laboratory detection limits for each analyte.
6. All of the samples were analyzed for **volatile organic compounds** (VOCs) in general accordance with EPA Method 8260B. None of the samples had concentrations reported above the laboratory detection limits for each analyte.
7. All of the samples were analyzed for California Code of Regulations (CCR) **Title 22 Metals** and **hexavalent chromium** in general accordance with EPA Method 6010B/7471A and EPA Method 7199, respectively. Results for metals reported in mg/kg.
8. All of the samples were analyzed for **polyaromatic hydrocarbons** (PAHs) in general accordance with EPA Method 8310. Results reported in micrograms per kilogram ( $\mu$  g/kg).
9. (9) California Human Health Screening Level for commercial/industrial land use. Values given in mg/kg.
10. NS = No standard
11. Samples collected by SCS Engineers on August 3, 2004.
12. <# - Sample result reported less than the laboratory detection limit for the analytical method used.
13. A reported concentration of an analyte in **boldface** denotes an exceedance of the applicable CHHSL.

**Table 5.18**  
**Monitoring Well Soil Sample Analytical Results**  
**Title 22 Metals, Hexavalent Chromium, and Semivolatile Organic Compounds**  
**Mission Bay Landfill**  
**San Diego, California**

Analytes	CHHSL <sup>7</sup> (mg/kg)	Sample Number																						
		SCS1-5'	SCS1-10'	SCS1-20'	SCS1-25'	SCS1-30'	SCS2-7'	SCS2-10'	SCS2-15'	SCS2-20'	SCS2-25'	SCS2-30'	SCS2-35'	SCS3-5'	SCS3-10'	SCS3-20'	SCS3-25'	SCS3-30'	SCS4-5'	SCS4-10'	SCS4-15'	SCS4-20'	SCS4-25'	SCS4-30'
<b>METALS (mg/kg)</b>																								
Antimony	380.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	<0.50	<0.50	0.59	1.06	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Arsenic	0.24	<b>3.86</b>	<b>8.2</b>	< <b>0.25</b>	< <b>0.25</b>	<b>3.92</b>	<b>7.72</b>	<b>8.53</b>	<b>0.28</b>	<b>0.97</b>	< <b>0.25</b>	< <b>0.25</b>	< <b>0.25</b>	<b>0.4</b>	<b>0.88</b>	< <b>0.25</b>	< <b>0.25</b>	<b>3.47</b>	<b>7.65</b>	<b>4.51</b>	<b>5.13</b>	< <b>0.25</b>	< <b>0.25</b>	< <b>0.25</b>
Barium	63,000.0	35.7	118	26.7	116	151	88.1	92.3	3.04	125	45.2	50.6	23.3	127	112	15.3	48.6	119	143	140	112	18.4	33.3	25.9
Beryllium	1,700.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Cadmium	7.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.52	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<b>11</b>	<0.50	<0.50
Chromium	100,000.0	10.6	31.5	5.46	16.7	27.2	27.8	29.4	1.46	18.6	9.2	6.85	5.82	20.4	33.6	8.59	6.49	21.1	34.4	32.8	27.4	4	5.22	4.32
Cobalt	3,200.0	4.93	12.6	2.19	7.95	13.7	9.94	10.9	<0.50	8.33	3.82	3.79	2.02	10.1	11.1	1.3	3.37	10.5	13	15.4	12.5	2.7	3.4	2.29
Copper	38,000.0	47.7	23.8	18.9	22.9	21.7	24.8	22.9	<0.50	8.5	17.3	6.55	28.3	21.2	36.5	2.02	11.4	15.6	29.5	32.8	131	38.6	124	16.9
Lead	3,500.0	7.96	7.67	0.39	0.94	2.7	7.42	4.59	<0.25	0.39	<0.25	<0.25	<0.25	14	34.8	5.1	2.18	2.34	12	4.56	11.4	16.4	9.25	2.54
Mercury	180.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Molybdenum	4,800.0	<0.50	1.08	<0.50	<0.50	<0.50	1.68	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.96	<0.50	<0.50	1.88	1.52	<0.50	0.99	<0.50	<0.50	<0.50
Nickel	16,000.0	7.33	17.5	2.36	7.83	14.5	9.45	9.74	<0.50	4.77	1.58	1.29	0.67	10.8	19.2	1.54	3.29	11.5	10.9	12	10.3	1.67	1.87	1.06
Selenium	4,800.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	4,800.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Thallium	63.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Vanadium	6,700.0	24.7	62.9	11.1	31.2	60.4	60.2	59.9	1.93	37.4	24.8	17	18.2	41.2	38.3	6.89	13.9	45.3	76.6	85.8	60.2	9.76	12.1	14
Zinc	100,000.0	193	64	13.6	35.2	55.1	50.6	56.6	1.89	30.6	15.4	11.8	12.6	59.8	101	6.72	14.8	42.1	61.2	59.6	102	34.4	111	16.6
<b>HEXAVALENT CHROMIUM (mg/kg)</b>																								
Hexavalent Chromium	37.0	NA	NA	0.2	0.22	NA	NA	NA	NA	<0.100	NA	NA	NA	NA	NA	0.65	NA	NA	NA	NA	NA	<0.100	<0.100	NA
<b>SVOCs (mg/kg)</b>																								
Bis(2-ethylhexyl) phthalate	NS	586	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<6,600	<3,300	<330	<330	<330	<330	<330	1,560	<330	<330	<330

- Notes**
- Soil samples were analyzed for Title 22 Metals in general accordance with EPA Method 6010B/7471A, Semivolatile Organic Compounds (SVOCs) in general accordance with EPA Method 8270. Select samples were also analyzed for hexavalent chromium in general accordance with EPA Method 7199.
  - Title 22 Metals and hexavalent chromium results reported in milligrams per kilogram (mg/kg) and SVOC results reported in micrograms per kilogram (ug/kg).
  - Please note that Bis(2-ethylhexyl) phthalate was the only SVOC analyte reported at a concentration above the laboratory detection limit.
  - NA = not analyzed
  - Samples collected by SCS Engineers on September 13 and 14, 2004.
  - < = Sample result reported less than the laboratory detection limit for that specific analyte.
  - (7) California Human Health Screening Level for commercial/industrial land use. Values given in mg/kg.
  - NS = No standard
  - A reported concentration of an analyte in **boldface** denotes an exceedance of the applicable CHHSL.

**Table 5.20**  
**November 22 and 23, 2004 Monitoring Well Groundwater Sample Analytical Results**  
**Volatile Organic Compounds, Semivolatile Organic Compounds, Hexavalent Chromium, and Conventional Water Quality Parameters**  
**Mission Bay Landfill**  
**San Diego, California**

Analytes	PHG <sup>6</sup> (µg/L)	Ocean Plan <sup>7</sup> (µg/L)	PRG <sup>8</sup> (µg/L)	Sample Number										
				MBW1	MBW2	MBW3	MBE4	MBW5	MBE6	MW10	SCS1	SCS2	SCS3	SCS4
<b>VOCs (µg/L)</b>														
Benzene	<b>0.15</b>	5.90	0.35	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000
Chlorobenzene	200.0	570.0	<b>106.07</b>	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000
cis-1,2-Dichloroethene	NS	NS	<b>60.83</b>	<1.000	<1.000	<1.000	5.8	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000
Ethylbenzene	<b>300.0</b>	4,100.0	1,339.87	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000
1,4-Dichlorobenzene	6.0	18.0	<b>0.50</b>	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<b>2.1</b>	<1.000	<1.000	<b>4.6</b>
Isopropylbenzene	NS	NS	<b>658.20</b>	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000
Methyl Tertiary Butyl Ether	13.0	NS	<b>11</b>	<2.000	<2.000	<2.000	<2.000	<2.000	<b>12.5</b>	<2.000	<2.000	<2.000	<2.000	<2.000
Naphthalene	NS	NS	NS	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000
1,2,4-Trimethylbenzene	NS	NS	<b>12.33</b>	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000
Total Xylenes	1,800.0	NS	<b>205.73</b>	<3.000	<3.000	<3.000	<3.000	<3.000	<3.000	<3.000	<3.000	<3.000	<3.000	<3.000
<b>SVOCs (µg/L)</b>														
No semivolatile organic compounds were detected above laboratory detection limits.														
<b>HEXAVALENT CHROMIUM (µg/L)</b>														
Hexavalent Chromium	NS	<b>2.0</b>	109.50	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000	<1.000
<b>CONVENTIONAL WATER QUALITY PARAMETERS (Units specified)</b>														
Conductivity (µmho/cm @ 77°F)	NA	NA	NA	69,000	59,500	86,500	111,000	59,500	42,400	74,100	56,100	69,600	51,800	56,300
Hardness (Ca, Mg) as CaCO <sub>3</sub> (mg/L)	NA	NA	NA	6,800	5,500	8,100	11,600	6,700	4,900	300	300	400	5,000	4,500
pH (pH units)	NA	NA	NA	6.78	6.87	6.63	6.86	7.08	7.37	7.07	6.73	6.76	6.95	6.68
Total Dissolved Solids (mg/L)	NA	NA	NA	42,000	38,700	60,400	82,300	39,700	28,500	49,300	34,800	47,100	33,500	34,800
Chloride (mg/L)	NA	NA	NA	25,000	21,700	35,300	49,000	23,300	15,600	29,500	17,400	27,500	19,100	22,100
Fluoride (mg/L)	NA	NA	NA	0.65	0.89	2.42	0.53	0.78	0.63	0.3	<0.100	2.22	0.38	1.71
Nitrate as N (mg/L)	NA	NA	NA	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
Sulfate (mg/L)	NA	NA	NA	910	35.5	2,710	4,340	3,270	2,200	3,630	176	1,120	2,540	815
Alkalinity, Total (mg/L)	NA	NA	NA	2,100	3,500	1,880	1,660	1,440	240	1,260	2,620	1,710	350	1,320
Bicarbonate (mg/L)	NA	NA	NA	2,100	3,500	1,620	1,440	1,200	240	1,080	2,220	1,450	270	1,120
Carbonate (mg/L)	NA	NA	NA	<10	<10	260	220	240	<10	180	400	260	80	200
Hydroxide (mg/L)	NA	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

**Notes:**

- All of the groundwater samples were analyzed for **volatile organic compounds (VOCs)** in general accordance with EPA Method 8260B, **semivolatile organic compounds (SVOCs)** in general accordance with EPA Method 8270C, and **hexavalent chromium** in general accordance with EPA Method 7199.
- EPA Methods for the conventional water quality parameters are as follows: conductivity (120.1), hardness (130.2), pH (150.1), TDS (160.1), chloride/fluoride/nitrate/sulfate (300), alkalinity/bicarbonate/carbonate/hydroxide (310.1).
- Results presented in table above are reported in micrograms per liter µg/L unless otherwise noted.
- Samples collected by SCS Engineers on November 22 and 23, 2004.
- <# - Sample result reported as less than the indicated laboratory detection limit for the analytical method used.
- (6) Office of Environmental Health Hazard Assessment Public Health Goals for **Drinking Water**.
- (7) California State Water Resources Control Board 2001, Ocean Plan: 6-month median.
- (8) United States Environmental Protection Agency Region 9 Preliminary Remediation Goals for **Tap Water**.
- NS = No standard available
- NA = Not applicable
- The water quality criterion in **boldface** denotes the most stringent of the three (PHGs, Ocean Plan, and PRGs)
- A reported concentration of an analyte in **boldface** denotes an exceedance of the most stringent water quality criteria

**Table 5.21**  
**Monitoring Well Groundwater and Drive Point Pore Water Sample Analytical Results**  
**Metals (Low Concentration Detection Method)**  
**Mission Bay Landfill**  
**San Diego, California**

Analytes	PHG <sup>7</sup> (µg/L)	Ocean Plan <sup>8</sup> (µg/L)	PRG <sup>9</sup> (µg/L)	Sample Number																	
				MBW1 (total)	MBW2	MBW3	MBE4	MBW5	MBE6	MW10	SCS1	SCS2	SCS3	SCS3 <sup>a</sup> (DUP)	SCS4	FB	TB	DP1	DP2	DP3	DP4
METALS (µg/L)																					
Beryllium	<b>1.0</b>	NS	73.0	0.0127	0.0243	0.0136	0.0593	0.00197	0.00131	0.00235	<0.001	0.00267	<0.001	0.00119	0.00172	<0.001	<0.001	0.001	0.00183	0.00584	0.00603
Vanadium	NS	NS	<b>36.0</b>	25.2	14.7	6.83	<b>52.4</b>	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	3.82	<0.85
Chromium	NS	190000	<b>54747</b>	16.7	1.45	3.51	1.73	0.184	0.126	0.974	3.25	0.569	0.589	0.548	0.74	0.595	0.1	0.289	0.153	0.344	0.42
Cobalt	NS	NS	<b>730.0</b>	4.98	2.71	2.57	18.9	9.25	0.754	1.74	9.84	8.87	0.909	0.947	9.1	<0.07	<0.07	1.18	2.32	1.67	1.02
Nickel	12.0	<b>5.0</b>	730.0 <sup>c</sup>	4.69	3.3	0.624	<b>34.2</b>	<b>8.99</b>	1.51	<b>5.18</b>	0.912	<b>8.55</b>	0.377	0.423	<b>10.4</b>	<0.026	<0.026	2.22	<b>5.02</b>	<b>23.4</b>	3.0
Copper	170.0	<b>3.0</b>	1,500	<b>21.8</b>	0.164	0.204	<b>10.2</b>	2.96	0.654	1.82	0.271	0.757	0.122	0.133	0.127	0.0331	0.0372	1.03	0.299	0.319	0.324
Zinc	NS	<b>20.0</b>	11,000	<b>163</b>	2.12	3.36	20	<b>118</b>	8.58	<b>68.1</b>	<b>56.9</b>	<b>111</b>	12.1	8.66	8.47	4.28	0.11	<b>429</b>	2.2	<b>286</b>	<b>307</b>
Arsenic	<b>0.0040</b>	8.0	0.045	<b>1.16</b>	<b>13.4</b>	<b>0.148</b>	<b>19.6</b>	<b>2.9</b>	<b>0.267</b>	<b>0.235</b>	<b>0.301</b>	<b>1.47</b>	<b>0.0824</b>	<b>0.072</b>	<b>0.802</b>	<b>&lt;0.016</b>	<b>&lt;0.016</b>	<b>0.655</b>	<b>0.686</b>	<b>0.92</b>	<b>0.105</b>
Selenium	NS	<b>15.0</b>	180.0	0.33	0.769	0.465	1.58	0.183	<0.057	0.623	0.278	0.259	0.089	<0.057	0.207	<0.057	<0.057	0.14	0.284	0.08	0.097
Molybdenum	NS	NS	<b>180.0</b>	3.95	7.19	0.894	85.6	53.0	21.6	23.7	0.561	21.4	6.04	6.16	6.36	<0.145	<0.145	11.9	15.8	8.94	5.36
Silver	NS	<b>0.7</b>	180.0	<b>2.27</b>	<0.02	<0.02	0.0366	0.0323	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.0293	0.0212	<0.02	0.1251
Cadmium	<b>0.070</b>	1.0	18.0	<b>0.205</b>	0.0216	0.038	<b>0.124</b>	<b>0.347</b>	0.0633	0.0528	0.0357	<b>0.268</b>	0.0201	0.0197	0.0131	0.0107	0.00871	<b>0.27</b>	0.0486	0.0375	0.0367
Antimony	20.0	NS	<b>15.0</b>	0.438	0.28	0.2	0.889	0.3	0.0993	0.753	0.446	0.476	0.168	0.314	0.284	<0.073	<0.073	0.467	0.781	0.62	0.287
Barium	<b>2000</b>	NS	2600	1,670	1,630	678	657	63.2	54.6	50.3	<b>4,900</b>	299	133	125	525	<0.018	<0.018	72.7	31.9	121	100
Thallium	<b>0.10</b>	NS	2.4	0.0287 <sup>b</sup>	0.024 <sup>b</sup>	0.0271 <sup>b</sup>	0.026 <sup>b</sup>	0.0304 <sup>b</sup>	0.025 <sup>b</sup>	0.0247 <sup>b</sup>	0.0277 <sup>b</sup>	0.033 <sup>b</sup>	0.0245 <sup>b</sup>	0.0243 <sup>b</sup>	0.0286 <sup>b</sup>	0.0174 <sup>b</sup>	0.0174 <sup>b</sup>	0.0671 <sup>b</sup>	0.0293 <sup>b</sup>	0.0259 <sup>b</sup>	0.0264 <sup>b</sup>
Lead	<b>2.0</b>	<b>2.0</b>	NS	1.9	0.0322	0.0228	0.374	0.0527	0.0124	0.074	0.0943	0.0704	0.0324	0.0553	0.0194	<0.009	<0.009	0.0568	0.0648	0.0745	<0.009
Mercury	1.2	<b>0.04</b>	11.0	<b>0.109</b>	0.000739	0.000719	0.0042	0.0206	0.000491	0.00266	0.00081	0.000994	0.000423	0.000425	0.00105	0.000159	0.000297	0.000343	0.000405	0.000406	0.000485

- Notes:**
- All of the groundwater samples were analyzed for Mercury in general accordance with EPA Method 1631 and 16 other metals (Beryllium, Vanadium, Chromium, Cobalt, Nickel, Copper, Zinc, Arsenic, Selenium, Molybdenum, Silver, Cadmium, Antimony, Barium, Thallium, Lead) in general accordance with EPA Method 1669/1640.
  - Results presented in table above are reported in micrograms per liter (µg/L).
  - Samples collected by SCS Engineers on November 15 and 23, 2004 and December 9, 2004.
  - <# = Sample result reported as less than the indicated laboratory detection limit for the analytical method used.
  - a = Sample name changed for clarity. Duplicate sample was collected from SCS3 and was designated as SCS5 on chain of custody.
  - b = Sample results are less than 5X the blank.
  - (7) Office of Environmental Health Hazard Assessment Public Health Goals for **Drinking Water**.
  - (8) California State Water Resources Control Board 2001, Ocean Plan: 6-month median.
  - (9) United States Environmental Protection Agency Region 9 Preliminary Remediation Goals for **Tap Water**.
  - NS = No Standard available
  - c = PRG value denoted for Nickel (soluble salts)
  - The water quality criterion in **boldface** denotes the most stringent of the three (PHGs, Ocean Plan, and PRGs).
  - A reported concentration of an analyte in **boldface** denotes an exceedance of the most stringent water quality criteria.

**Table 5.22**  
**November 30, 2004 Monitoring Well Groundwater Sample Analytical Results**  
**Volatile Organic Compounds, Metals, and Conventional Water Quality Parameters**  
**Mission Bay Landfill**  
**San Diego, California**

Analytes	PHG <sup>5</sup> (µg/L)	Ocean Plan <sup>6</sup> (µg/L)	PRG <sup>7</sup> (µg/L)	Sample Number							
				MBW1	MBW2	MBW3	MBE4	MBW5	MBE6	MBW7	MW10
<b>METALS (µg/L)</b>											
Arsenic	<b>0.0040</b>	8.0	0.045	<b>4.0</b>	<b>5.0</b>	<b>10.0</b>	<b>16.0</b>	<b>12.0</b>	<b>6.0</b>	<b>&lt;13.0</b>	<b>1.0</b>
Barium	<b>2,000</b>	NS	2,600	NA	NA	NA	259.0	NA	NA	NA	NA
Chromium	NS	190,000	<b>54,747</b>	<4.0	<4.0	4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Iron	NS	NS	<b>10,949.88</b>	NA	NA	NA	90.0	NA	NA	NA	NA
Molybdenum	NS	NS	<b>180.0</b>	NA	NA	NA	<b>214.0</b>	NA	NA	NA	NA
Nickel	12.0	<b>5.0</b>	730.0 <sup>b</sup>	NA	NA	NA	<b>17.0</b>	NA	NA	NA	NA
Lead	<b>2.0</b>	<b>2.0</b>	NS	NA	NA	NA	<1.0	NA	NA	NA	NA
Antimony	20.0	NS	<b>15.0</b>	NA	NA	NA	2.0	NA	NA	NA	NA
Selenium	NS	<b>15.0</b>	180.0	NA	NA	NA	<b>36.0</b>	NA	NA	NA	NA
Thallium	<b>0.10</b>	NS	2.4	<b>&lt;0.6</b>	<b>&lt;0.6</b>						
Vanadium	NS	NS	<b>36.0</b>	NA	NA	NA	<b>67.0</b>	NA	NA	NA	NA
Zinc	NS	<b>20.0</b>	11,000	NA	NA	NA	<b>59.0</b>	NA	NA	NA	NA
<b>VOCs (µg/L)</b>											
Benzene	<b>0.15</b>	5.90	0.35	<0.28	<0.28	<0.28	<b>0.32</b>	<0.28	<0.28	<0.28	<0.28
Diethyl ether	NS	NS	NS	1.34	1.19	0.95	0.77	<0.33	<0.33	<0.33	<0.33
cis-1,2-Dichloroethene	NS	NS	<b>60.83</b>	<0.26	<0.26	<0.26	6.77	<0.26	<0.26	<0.26	<0.26
1,2-Dichloropropane	0.50	NS	<b>0.165</b>	<0.28	<0.28	<0.28	<b>0.54</b>	<0.28	<0.28	<0.28	<0.28
Vinyl chloride	0.05	36.0	<b>0.0198<sup>a</sup></b>	<0.38	<0.38	<0.38	<b>0.80</b>	<0.38	<0.38	<0.38	<0.38
Methylene chloride	NS	NS	<b>4.276</b>	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35
Total Xylenes	1,800	NS	<b>205.73</b>	<0.76	<0.76	<0.76	0.43	<0.76	<0.76	<0.76	<0.76
<b>CONVENTIONAL WATER QUALITY PARAMETERS (Units specified)</b>											
Ammonia as N (mg/L)	NS	<b>600.0</b>	NS	NA	NA	NA	6.96	NA	NA	NA	NA
Specific Conductance (µmho/cm)	NS	NS	NS	NA	NA	NA	81,400	NA	NA	NA	NA
Nitrate as N (mg/L)	NS	NS	NS	0.19	0.1	<0.009	0.16	0.09	0.009	0.09	0.10
Nitrite as N (mg/L)	NS	NS	NS	<0.007	<0.007	0.009	0.02	<0.007	<0.007	<0.007	<0.007
Oil & Grease	NS	NS	NS	NA	NA	NA	<1	NA	NA	NA	NA
pH (pH units)	NS	NS	NS	6.54	6.39	6.68	6.86	6.84	7.11	7.03	6.68
Total Dissolved Solids (mg/L)	NS	NS	NS	NA	NA	NA	48,600	NA	NA	NA	NA
Sulfate as SO <sub>4</sub> (mg/L)	NS	NS	NS	807	2,710	10.9	2,320	3,100	1,950	1,320	4,410
Total Sulfide	NS	NS	NS	NA	NA	NA	<0.05	NA	NA	NA	NA

**Notes:**

1. All of the groundwater samples were analyzed for **volatile organic compounds** (VOCs) in general accordance with EPA Method 8260B, 12 metals (arsenic, barium, chromium, iron, molybdenum, nickel, lead, antimony, selenium, thallium, vanadium, and zinc) in general accordance with EPA Methods 6010/6020.
2. Laboratory Methods for the conventional water quality parameters are as follows: ammonia as N (SM4500 NH<sub>3</sub> B,C), specific conductance (SM2510 B), nitrate as N (SM4500 NO<sub>3</sub> E), nitrite as N (SM4500 NO<sub>2</sub> B), oil & grease (EPA 413.1), pH (150.1), TDS (SM2540C), sulfate as SO<sub>4</sub> (SM4500 SO<sub>4</sub> E), and total sulfide (SM4500 S D).
3. Samples collected by EMCON on November 30, 2004.
4. <# - Sample result reported as less than the indicated laboratory detection limit for the analytical method used.
5. (5) Office of Environmental Health Hazard Assessment Public Health Goals for **Drinking Water**.
6. (6) California State Water Resources Control Board 2001, Ocean Plan: 6-month median.
7. (7) United States Environmental Protection Agency Region 9 Preliminary Remediation Goals for **Tap Water**.
8. NS = No standard available
9. NA = Not analyzed
10. a = standard for child/adult, Note in PRG table states "Non-Standard Method Applied (See User's Guide)"
11. b = PRG value denoted for Nickel (soluble salts)
12. The water quality criterion in **boldface** denotes the most stringent of the three (PHGs, Ocean Plan, and PRGs).
13. A reported concentration of an analyte in **boldface** denotes an exceedance of the most stringent water quality criteria.

**Table 5.23**  
**Groundwater Sample Metals Analytical Results Comparison**  
**Conventional Concentration Metals (EPA Methods 6010/6020) and Ultra Low Concentration Metals (EPA Method 1669/1640)**  
**Mission Bay Landfill**  
**San Diego, California**

Analytes	Beryllium		Vanadium		Chromium		Cobalt		Nickel		Copper		Zinc		Arsenic		Selenium		Molybdenum		Silver		Cadmium		Antimony		Barium		Thallium		Lead		Mercury	
	(µg/L)		(µg/L)		(µg/L)		(µg/L)		(µg/L)		(µg/L)		(µg/L)		(µg/L)		(µg/L)		(µg/L)		(µg/L)		(µg/L)		(µg/L)		(µg/L)		(µg/L)		(µg/L)		(µg/L)	
Units	1.0		36.0		54,747		730.0		5.0		3.0		20.0		0.004		15.0		180.0		0.7		0.07		15.0		2,000		0.1		2.0		0.04	
Most stringent criterion	1.0		36.0		54,747		730.0		5.0		3.0		20.0		0.004		15.0		180.0		0.7		0.07		15.0		2,000		0.1		2.0		0.04	
Analysis Code	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
MBW1	0.0127	NA	25.2	NA	16.7	<4.0	4.98	NA	4.69	NA	<b>21.8</b>	NA	<b>163.0</b>	NA	<b>1.16</b>	<b>4.0</b>	0.33	NA	3.95	NA	<b>2.27</b>	NA	<b>0.205</b>	NA	0.438	NA	1,670.0	NA	0.0287 <sup>b</sup>	< <b>0.6</b>	1.9	NA	<b>0.109</b>	NA
MBW2	0.0243	NA	14.7	NA	1.45	<4.0	2.71	NA	3.3	NA	0.164	NA	2.12	NA	<b>13.4</b>	<b>5.0</b>	0.769	NA	7.19	NA	<0.02	NA	0.0216	NA	0.28	NA	1,630.0	NA	0.024 <sup>b</sup>	< <b>0.6</b>	0.0322	NA	0.000739	NA
MBW3	0.0136	NA	6.83	NA	3.51	4.0	2.57	NA	0.624	NA	0.204	NA	3.36	NA	<b>0.148</b>	<b>10.0</b>	0.465	NA	0.894	NA	<0.02	NA	0.038	NA	0.2	NA	678.0	NA	0.0271 <sup>b</sup>	< <b>0.6</b>	0.0228	NA	0.000719	NA
MBE4	0.0593	NA	<b>52.4</b>	<b>67.0</b>	1.73	<4.0	18.9	NA	<b>34.2</b>	<b>17.0</b>	<b>10.2</b>	NA	20.0	<b>59.0</b>	<b>19.6</b>	<b>16.0</b>	1.58	<b>36.0</b>	85.6	<b>214.0</b>	0.0366	NA	<b>0.124</b>	NA	0.889	2.0	657.0	259.0	0.026 <sup>b</sup>	< <b>0.6</b>	0.374	<1.0	0.0042	NA
MBW5	0.002	NA	<0.85	NA	0.184	<4.0	9.25	NA	<b>8.99</b>	NA	2.96	NA	<b>118.0</b>	NA	<b>2.9</b>	<b>12.0</b>	0.183	NA	53.0	NA	0.0323	NA	<b>0.347</b>	NA	0.3	NA	63.2	NA	0.0304 <sup>b</sup>	< <b>0.6</b>	0.0527	NA	0.0206	NA
MBE6	0.0013	NA	<0.85	NA	0.126	<4.0	0.754	NA	1.51	NA	0.654	NA	8.58	NA	<b>0.267</b>	<b>6.0</b>	<0.057	NA	21.6	NA	<0.02	NA	0.0633	NA	0.0993	NA	54.6	NA	0.025 <sup>b</sup>	< <b>0.6</b>	0.0124	NA	0.000491	NA
MBW7	NA	NA	NA	NA	NA	<4.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	< <b>13.0</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< <b>0.6</b>	NA	NA	NA	NA
MW10	0.0024	NA	<0.85	NA	0.974	<4.0	1.74	NA	<b>5.18</b>	NA	1.82	NA	<b>68.1</b>	NA	<b>0.235</b>	<b>1.0</b>	0.623	NA	23.7	NA	<0.02	NA	0.0528	NA	0.753	NA	50.3	NA	0.0247 <sup>b</sup>	< <b>0.6</b>	0.074	NA	0.00266	NA

**Notes:**

1. Results presented in table above are reported in micrograms per liter (µg/L).
2. Analysis Code A = Samples collected by SCS Engineers on November 15 and 23, 2004 and December 9, 2004 and analyzed for Mercury in general accordance with EPA Method 1631 and 16 other metals (Beryllium, Vanadium, Chromium, Cobalt, Nickel, Copper, Zinc, Arsenic, Selenium, Molybdenum, Silver, Cadmium, Antimony, Barium, Thallium, Lead) in general accordance with EPA Method 1669/1640.
3. Analysis code B = Samples collected by EMCON on November 30, 2004 and analyzed for volatile organic compounds (VOCs) in general accordance with EPA Method 8260B, 12 metals (arsenic, barium, chromium, iron, molybdenum, nickel, lead, antimony, selenium, thallium, vanadium, and zinc) in general accordance with EPA Methods 6010/6020.
4. <# - Sample result reported as less than the indicated laboratory detection limit for the analytical method used.
5. Most stringent criterion was taken from three guidance documents 1) Office of Environmental Health Hazard Assessment Public Health Goals for Drinking Water, 2) California State Water Resources Control Board 2001, Ocean Plan: 6-month median, 3) United States Environmental Protection Agency Region 9 Preliminary Remediation Goals for Tap Water.
6. b = Sample results are less than 5X the blank.
7. NA = Not analyzed
8. A reported concentration of an analyte in **boldface** denotes an exceedance of the most stringent water quality criterion value.

**Table 5.24**  
**Drive Point Pore Water Sample Analytical Results**  
**Volatile Organic Compounds, Semivolatile Organic Compounds, Hexavalent Chromium, and Conventional Water Quality Parameters**  
**Mission Bay Landfill**  
**San Diego, California**

Analytes	PHG <sup>7</sup> (µg/L)	Ocean Plan <sup>8</sup> (µg/L)	PRG <sup>9</sup> (µg/L)	Sample Number			
				DP1	DP2	DP3	DP4
<b>VOCs (µg/L)</b>							
Benzene	<b>0.15</b>	5.9	0.35	<1.000	<1.000	<1.000	<1.000
Chlorobenzene	200.0	570.0	<b>106.07</b>	<1.000	<1.000	<1.000	<1.000
cis-1,2-Dichloroethene	NS	NS	<b>60.83</b>	<1.000	<1.000	<1.000	<1.000
Ethylbenzene	<b>300.0</b>	4,100.0	1,339.87	<1.000	<1.000	<1.000	<1.000
1,4-Dichlorobenzene	6.0	18.0	<b>0.5</b>	<1.000	<1.000	<1.000	<1.000
Isopropylbenzene	NS	NS	<b>658.2</b>	<1.000	<1.000	<1.000	<1.000
Naphthalene	NS	NS	NS	<1.000	<1.000	<1.000	<1.000
1,2,4-Trimethylbenzene	NS	NS	<b>12.33</b>	<1.000	<1.000	<1.000	<1.000
Total Xylenes	1,800.0	NS	<b>205.73</b>	<3.000	<3.000	<3.000	<3.000
Methyl Tertiary Butyl Ether	13.0	NS	<b>11.0</b>	<2.000	<2.000	<2.000	<2.000
<b>SVOCs (µg/L)</b>							
No semivolatile organic compounds were detected above laboratory detection limits							
<b>HEXAVALENT CHROMIUM (µg/L)</b>							
Hexavalent Chromium	NS	<b>2.0</b>	109.49999	<1.000	<1.000	<1.000	<1.000
<b>CONVENTIONAL WATER QUALITY PARAMETERS (Units specified)</b>							
Conductivity (µmho/cm @ 77°F)	NA	NA	NA	54,700	52,600	52,200	52,500
Hardness (Ca, Mg) as CaCO <sub>3</sub> (mg/L)	NA	NA	NA	6,000	4,800	5,400	5,500
pH	NA	NA	NA	7.95	7.72	6.94	6.84
Total Dissolved Solids (mg/L)	NA	NA	NA	36,000	31,600	33,900	34,900
Chloride (mg/L)	NA	NA	NA	20,600	19,500	21,100	19,600
Fluoride (mg/L)	NA	NA	NA	0.2	0.57	0.99	0.95
Nitrate as N (mg/L)	NA	NA	NA	<0.100	<0.100	0.4	0.3
Sulfate (mg/L)	NA	NA	NA	2,790	2,630	2,660	2,640
Alkalinity, Total (mg/L)	NA	NA	NA	210	150	360	350
Bicarbonate (mg/L)	NA	NA	NA	170	150	360	350
Carbonate (mg/L)	NA	NA	NA	40	<10	<10	<10
Hydroxide (mg/L)	NA	NA	NA	<10	<10	<10	<10

- Notes:**
- All of the groundwater samples were analyzed for **volatile organic compounds** (VOCs) in general accordance with EPA Method 8260B, **semivolatile organic compounds** (SVOCs) in general accordance with EPA Method 8270C, and **hexavalent chromium** in general accordance with EPA Method 7199.
  - EPA Methods for the conventional water quality parameters are as follows: conductivity (120.1), hardness (130.2), pH (150.1), TDS (160.1), chloride/fluoride/nitrate/sulfate (300), alkalinity/bicarbonate/carbonate/hydroxide (310.1).
  - Results presented in table above are reported in micrograms per liter (µg/L) unless otherwise noted.
  - Samples collected by SCS Engineers on November 23, 2004 and December 9, 2004.
  - <# - Sample result reported as less than the indicated laboratory detection limit for the analytical method used.
  - NS = No Standard available
  - (7) Office of Environmental Health Hazard Assessment Public Health Goals for **Drinking Water**.
  - (8) California State Water Resources Control Board 2001, Ocean Plan: 6-month median.
  - (9) United States Environmental Protection Agency Region 9 Preliminary Remediation Goals for **Tap Water**.
  - NA = Not applicable
  - The water quality criterion in **boldface** denotes the most stringent of the three (PHGs, Ocean Plan, and PRGs).
  - A reported concentration of an analyte in **boldface** denotes an exceedance of the most stringent water quality criteria.

**Table 5.25 (Page 1 of 4)**  
**Summary of COPCs, Maximum Concentrations, and Analytical Methods Used in Each Medium**  
**Mission Bay Landfill, San Diego, California**

Type of Constituent of Potential Concern	Analytical Method	Analyte	Sample Media										
			Surface Soils	Units	Sediment	Units	Subsurface Soil	Units	Landfill Gas/ Near Surface Emission/ Surface Emission	Units	Ground-water	Units	
Fixed or Light	D1946	Carbon dioxide								28	% (v/v)		
Gases	D1946	Carbon monoxide								<0.0023	% (v/v)		
	D1946	Ethane								0.0026	% (v/v)		
	D1946	Methane								41	% (v/v)		
	D1946	Nitrogen								79	% (v/v)		
	D1946	Oxygen								23	% (v/v)		
Gaseous Sulfur Compounds	EPA 15/16	Carbonyl sulfide								<0.2	ppm(v/v)		
	EPA 15/16	Dimethyl sulfide								<0.2	ppm(v/v)		
	EPA 15/16	Ethyl mercaptan								<0.2	ppm(v/v)		
	EPA 15/16	Hydrogen sulfide								20	ppm(v/v)		
	EPA 15/16	Methyl mercaptan								<0.2	ppm(v/v)		
Non-Methane VOCs	EPA 25C	Total Non-Methane Hydrocarbons as Methane								920	ppm-c		
Gaseous Volatile Organic Compounds	TO-15	1,1,1-Trichloro-ethane								<17	ppb(v/v)		
	TO-15	1,1,2,2-Tetrachloro-ethane								<17	ppb(v/v)		
	TO-15	1,1-Dichloro-ethane								<17	ppb(v/v)		
	TO-15	1,1-Dichloro-ethene								<17	ppb(v/v)		
	TO-15	1,2-Dibromoethane (EDB)								<17	ppb(v/v)		
	TO-15	1,2-Dichloro-benzene								29	ppb(v/v)		
	TO-15	1,2-Dichloro-ethane								<17	ppb(v/v)		
	TO-15	1,2-Dichloro-propane								<17	ppb(v/v)		
	TO-15	1,3-Dichloro-benzene								<17	ppb(v/v)		
	TO-15	1,4-Dichloro-benzene								160	ppb(v/v)		
	TO-15	2-Butanone (MEK)								40	ppb(v/v)		
	TO-15	2-Propanol								32	ppb(v/v)		
	TO-15	4-Methyl-2-pentanone (MIBK)								<85	ppb(v/v)		
	TO-15	Acetone								140	ppb(v/v)		
	TO-15	Acrylo-nitrile								<85	ppb(v/v)		
	TO-15	Bromo-dichloro-methane								2.6	ppb(v/v)		
	TO-15	Carbon disulfide								3.5	ppb(v/v)		
	TO-15	Carbon tetra-chloride								<17	ppb(v/v)		
	TO-15	Chloro-benzene								36	ppb(v/v)		
	TO-15	Chloro-difluoro-methane								230	ppb(v/v)		
	TO-15	Chloro-ethane								8.5	ppb(v/v)		
	TO-15	Chloro-form								18	ppb(v/v)		
	TO-15	Chloro-methane								0.94	ppb(v/v)		
	TO-15	Dichloro-difluoro-methane								190	ppb(v/v)		
	TO-15	Dichloro-fluoro-methane								11	ppb(v/v)		
	TO-15	Ethanol								160	ppb(v/v)		
	TO-15	Ethyl-benzene								810	ppb(v/v)		
	TO-15	m- & p-Xylenes								730	ppb(v/v)		
	TO-15	Methylene chloride								0.77	ppb(v/v)		
	TO-15	n-Butane								4,800	ppb(v/v)		
TO-15	n-Hexane								470	ppb(v/v)			
TO-15	o-Xylene								300	ppb(v/v)			
TO-15	Pentane								1,500	ppb(v/v)			
TO-15	Propane								11,000	ppb(v/v)			
TO-15	Tetrachloro-ethene								<17	ppb(v/v)			
TO-15	trans-1,2-Dichloro-ethene								<17	ppb(v/v)			
TO-15	Trichloro-ethene								9.1	ppb(v/v)			
TO-15	Trichloro-fluoro-methane								<17	ppb(v/v)			
TO-15	Vinyl chloride								56	ppb(v/v)			
Chlorinated Herbicides	8151A	2,4-D	<1.1	µg/kg	<1.1	µg/kg							
	8151A	2,4-DB	<5.0	µg/kg	<5.0	µg/kg							
	8151A	2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)	<1.2	µg/kg	<1.2	µg/kg							
	8151A	2,4,5,-TP (Silvex)	<1.2	µg/kg	<1.2	µg/kg							
	8151A	Dalapon	<0.5	µg/kg	<0.5	µg/kg							
	8151A	Dicamba	<0.6	µg/kg	<0.6	µg/kg							
	8151A	Dichloroprop	<0.8	µg/kg	<0.8	µg/kg							
	8151A	Dinoseb (DNBP, 2-sec-Butyl-4, 6-dinitrophenol)	<1.1	µg/kg	<1.1	µg/kg							
	8151A	MCPA	<200	µg/kg	<200	µg/kg							
	8151A	MCPP	<150	µg/kg	<150	µg/kg							
	8151A	Pentachlorophenol	<1.0	µg/kg	<1.0	µg/kg							
	8151A	4-Nitrophenol	<5.0	µg/kg	<5.0	µg/kg							
Volatile Organic Compounds (VOCs)	8260B	Acetone	147	µg/kg	<50.0	µg/kg					<5.0	µg/L	
	8260B	Benzene	<2.0	µg/kg	<2.0	µg/kg				7.8	µg/L	5.4	µg/L
	8260B	Bromobenzene (Phenyl bromide)	<10.0	µg/kg	<10.0	µg/kg					<1.0	µg/L	
	8260B	Bromochloromethane (Chlorobromomethane)	<10.0	µg/kg	<10.0	µg/kg					<1.0	µg/L	
	8260B	Bromodichloromethane (Dichlorobromomethane)	<10.0	µg/kg	<10.0	µg/kg					<1.0	µg/L	
	8260B	Bromoform (Tribromomethane)	<50.0	µg/kg	<50.0	µg/kg					<5.0	µg/L	
	8260B	Bromomethane (Methyl bromide)	<30.0	µg/kg	<30.0	µg/kg					<3.0	µg/L	
	8260B	2-Butanone (MEK, Methyl ethyl ketone)	<50.0	µg/kg	<50.0	µg/kg					<5.0	µg/L	
	8260B	n-Butylbenzene	<10.0	µg/kg	<10.0	µg/kg					<1.0	µg/L	
	8260B	sec-Butylbenzene	<10.0	µg/kg	<10.0	µg/kg					<1.0	µg/L	
	8260B	tert-Butylbenzene	<10.0	µg/kg	<10.0	µg/kg					<1.0	µg/L	

**Table 5.25 (Page 2 of 4)**  
**Summary of COPCs, Maximum Concentrations, and Analytical Methods Used in Each Medium**  
**Mission Bay Landfill, San Diego, California**

Type of Constituent of Potential Concern	Analytical Method	Analyte	Sample Media										
			Surface Soils	Units	Sediment	Units	Subsurface Soil	Units	Landfill Gas/ Near Surface Emission/ Surface Emission	Units	Ground-water	Units	
	8260B	Carbon disulfide	<10.0	µg/kg	<10.0	µg/kg						<1.0	µg/L
	8260B	Carbon tetrachloride (Tetrachloromethane)	<10.0	µg/kg	<10.0	µg/kg						<1.0	µg/L
	8260B	Chlorobenzene	<10.0	µg/kg	<10.0	µg/kg						<b>10.2</b>	µg/L
	8260B	Chloroethane	<30.0	µg/kg	<30.0	µg/kg						<3.0	µg/L
	8260B	2-Chloroethyl vinyl ether	<50.0	µg/kg	<50.0	µg/kg						<5.0	µg/L
	8260B	Chloroform (Trichloromethane)	<10.0	µg/kg	<10.0	µg/kg				<1.0	µg/L	<1.0	µg/L
	8260B	Chloromethane (Methyl chloride)	<30.0	µg/kg	<30.0	µg/kg						<3.0	µg/L
	8260B	4-Chlorotoluene (p-Chlorotoluene)	<10.0	µg/kg	<10.0	µg/kg						<1.0	µg/L
	8260B	2-Chlorotoluene (o-Chlorotoluene)	<10.0	µg/kg	<10.0	µg/kg						<1.0	µg/L
	8260B	1,2-Dibromo-3-chloropropane (DBCP)	<50.0	µg/kg	<50.0	µg/kg						<5.0	µg/L
	8260B	Dibromochloromethane	<10.0	µg/kg	<10.0	µg/kg						<1.0	µg/L
	8260B	1,2-Dibromoethane (EDB, Ethylene dibromide)	<10.0	µg/kg	<10.0	µg/kg						<1.0	µg/L
	8260B	Dibromomethane	<10.0	µg/kg	<10.0	µg/kg						<1.0	µg/L
	8260B	1,2-Dichlorobenzene (o-Dichlorobenzene)	<10.0	µg/kg	<10.0	µg/kg						<1.0	µg/L
	8260B	1,3-Dichlorobenzene (m-Dichlorobenzene)	<10.0	µg/kg	<10.0	µg/kg						<1.0	µg/L
	8260B	1,4-Dichlorobenzene (p-Dichlorobenzene)	<10.0	µg/kg	<10.0	µg/kg						<b>8.3</b>	µg/L
	8260B	Dichlorodifluoromethane	<30.0	µg/kg	<30.0	µg/kg				<1.0	µg/L	<3.0	µg/L
	8260B	1,1-Dichloroethane	<10.0	µg/kg	<10.0	µg/kg				<1.0	µg/L	<1.0	µg/L
	8260B	1,2-Dichloroethane	<10.0	µg/kg	<10.0	µg/kg				<1.0	µg/L	<1.0	µg/L
	8260B	1,1-Dichloroethene (1,1-Dichloroethylene)	<10.0	µg/kg	<10.0	µg/kg				<1.0	µg/L	<1.0	µg/L
	8260B	cis-1,2-Dichloroethene	<10.0	µg/kg	<10.0	µg/kg				<1.0	µg/L	<b>5.8</b>	µg/L
	8260B	trans-1,2-Dichloroethene	<10.0	µg/kg	<10.0	µg/kg				<1.0	µg/L	<1.0	µg/L
	8260B	1,2-Dichloropropane	<10.0	µg/kg	<10.0	µg/kg						<1.0	µg/L
	8260B	1,3-Dichloropropane	<10.0	µg/kg	<10.0	µg/kg						<1.0	µg/L
	8260B	2,2-Dichloropropane	<10.0	µg/kg	<10.0	µg/kg						<1.0	µg/L
	8260B	1,1-Dichloropropene	<10.0	µg/kg	<10.0	µg/kg						<1.0	µg/L
	8260B	cis-1,3-Dichloropropene	<10.0	µg/kg	<10.0	µg/kg						<1.0	µg/L
	8260B	trans-1,3-Dichloropropene	<10.0	µg/kg	<10.0	µg/kg						<1.0	µg/L
	8260B	Ethylbenzene	<2.0	µg/kg	<2.0	µg/kg				<b>6</b>	µg/L	<b>8.7</b>	µg/L
	8260B	Hexachlorobutadiene (1,3-Hexachlorobutadiene)	<30.0	µg/kg	<30.0	µg/kg						<3.0	µg/L
	8260B	2-Hexanone	<50.0	µg/kg	<50.0	µg/kg						<5.0	µg/L
	8260B	Isopropylbenzene	<10.0	µg/kg	<10.0	µg/kg						<b>3.3</b>	µg/L
	8260B	p-Isopropyltoluene (4-Isopropyltoluene)	<10.0	µg/kg	<10.0	µg/kg						<1.0	µg/L
	8260B	MTBE	<5.0	µg/kg	<5.0	µg/kg				<1.0	µg/L	<2.0	µg/L
	8260B	4-Methyl-2-pentanone (MIBK, Methyl isobutyl ketone)	<50.0	µg/kg	<50.0	µg/kg						<5.0	µg/L
	8260B	Methylene chloride (Dichloromethane, DCM)	<50.0	µg/kg	<50.0	µg/kg				<1.0	µg/L	<5.0	µg/L
	8260B	Naphthalene	<10.0	µg/kg	<10.0	µg/kg						<b>24.6</b>	µg/L
	8260B	n-Propylbenzene	<10.0	µg/kg	<10.0	µg/kg						<1.0	µg/L
	8260B	Styrene	<10.0	µg/kg	<10.0	µg/kg						<1.0	µg/L
	8260B	1,1,1,2-Tetrachloroethane	<10.0	µg/kg	<10.0	µg/kg						<1.0	µg/L
	8260B	1,1,2,2-Tetrachloroethane	<10.0	µg/kg	<10.0	µg/kg						<1.0	µg/L
	8260B	Tetrachloroethene (Tetrachloroethylene)	<10.0	µg/kg	<10.0	µg/kg				<1.0	µg/L	<1.0	µg/L
	8260B	Toluene (Methyl benzene)	<2.0	µg/kg	<2.0	µg/kg				<1.0	µg/L	<1.0	µg/L
	8260B	1,2,3-Trichlorobenzene	<10.0	µg/kg	<10.0	µg/kg						<1.0	µg/L
	8260B	1,2,4-Trichlorobenzene	<10.0	µg/kg	<10.0	µg/kg						<1.0	µg/L
	8260B	1,1,1-Trichloroethane	<10.0	µg/kg	<10.0	µg/kg				<1.0	µg/L	<1.0	µg/L
	8260B	1,1,2-Trichloroethane	<10.0	µg/kg	<10.0	µg/kg				<1.0	µg/L	<1.0	µg/L
	8260B	Trichloroethene (TCE)	<10.0	µg/kg	<10.0	µg/kg				<1.0	µg/L	<1.0	µg/L
	8260B	Trichlorofluoromethane	<10.0	µg/kg	<10.0	µg/kg				<1.0	µg/L	<1.0	µg/L
	8260B	1,2,3-Trichloropropane	<10.0	µg/kg	<10.0	µg/kg						<1.0	µg/L
	8260B	1,2,4-Trimethylbenzene	<10.0	µg/kg	<10.0	µg/kg						<b>5.4</b>	µg/L
	8260B	1,3,5-Trimethylbenzene	<10.0	µg/kg	<10.0	µg/kg						<1.0	µg/L
	8260B	Vinyl acetate	<50.0	µg/kg	<50.0	µg/kg						<5.0	µg/L
	8260B	Vinyl chloride (Chloroethene)	<30.0	µg/kg	<30.0	µg/kg				<b>2.8</b>	µg/L	<1.0	µg/L
	8260B	Total Xylenes	<6.0	µg/kg	<6.0	µg/kg				<3.0	µg/L	<b>10.7</b>	µg/L
	8260B	Freon 113								<b>1.7</b>	µg/L		
	8260B	1,1-Difluoroethane								<10.0	µg/L		
	8260B	Di-isopropyl ether								<1.0	µg/L		
	8260B	Ethyl tert-butyl ether								<1.0	µg/L		
	8260B	Tert-amyl methyl ether								<1.0	µg/L		
	8260B	Tert-butyl alcohol								<10.0	µg/L		
Semi-Volatile	8270	Acenaphthene	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg				<10.0	µg/L
Organic	8270	Acenaphthylene	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg				<10.0	µg/L
Compounds	8270	Anthracene	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg				<10.0	µg/L
(SVOCs)	8270	Benzo(a)anthracene (Benzo(a)anthracene)	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg				<10.0	µg/L
	8270	Benzo(a)pyrene	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg				<10.0	µg/L
	8270	Benzo(b)fluoranthene	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg				<10.0	µg/L
	8270	Benzo(ghi)perylene	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg				<10.0	µg/L
	8270	Benzo(k)fluoranthene	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg				<10.0	µg/L
	8270	Benzoic acid	<1,700	µg/kg	<1,700	µg/kg	<1,700 to <34,000	µg/kg				<10.0	µg/L
	8270	Benzyl alcohol	<660	µg/kg	<660	µg/kg	<660 to <13,200	µg/kg				<10.0	µg/L
	8270	Bis(2-chloroethoxy)methane	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg				<10.0	µg/L
	8270	Bis(2-chloroethyl)ether	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg				<10.0	µg/L

**Table 5.25 (Page 3 of 4)**  
**Summary of COPCs, Maximum Concentrations, and Analytical Methods Used in Each Medium**  
**Mission Bay Landfill, San Diego, California**

Type of Constituent of Potential Concern	Analytical Method	Analyte	Sample Media									
			Surface Soils	Units	Sediment	Units	Subsurface Soil	Units	Landfill Gas/ Near Surface Emission/ Surface Emission	Units	Ground-water	Units
	8270	Bis(2-chloroisopropyl) ether	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	Bis(2-ethylhexyl) phthalate	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<b>40.2</b>	µg/L
	8270	4-Bromophenyl phenyl ether	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	Butyl benzyl phthalate (Benzyl butyl phthalate)	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	4-Chloro-3-methylphenol (p-Chloro-m-cresol)	<660	µg/kg	<660	µg/kg	<660 to <13,200	µg/kg			<1.0	µg/L
	8270	4-Chloroaniline	<660	µg/kg	<660	µg/kg	<660 to <13,200	µg/kg			<10.0	µg/L
	8270	2-Chloronaphthalene	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	2-Chlorophenol (o-Chlorophenol)	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<1.0	µg/L
	8270	4-Chlorophenyl phenyl ether	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	Chrysene	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	Di-n-butyl phthalate	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	Di-n-octyl phthalate (Dioctyl ester)	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	Dibenz(a,h)anthracene	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	Dibenzofuran	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	1,3-Dichlorobenzene (m-Dichlorobenzene)	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	1,2-Dichlorobenzene (o-Dichlorobenzene)	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	1,4-Dichlorobenzene	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	3,3'-Dichlorobenzidine	<660	µg/kg	<660	µg/kg	<660 to <13,200	µg/kg			<20.0	µg/L
	8270	2,4-Dichlorophenol	<1,700	µg/kg	<1,700	µg/kg	<1,700 to <34,000	µg/kg			<1.0	µg/L
	8270	Diethyl phthalate (Diethyl ester)	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	2,4-Dimethylphenol	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<1.0	µg/L
	8270	Dimethyl phthalate (Dimethyl ester)	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	2,4-Dinitrophenol	<1,700	µg/kg	<1,700	µg/kg	<1,700 to <34,000	µg/kg			<1.0	µg/L
	8270	2,4-Dinitrotoluene	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	2,6-Dinitrotoluene (2,6-DNT)	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	Fluoranthene	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	Fluorene	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	Hexachlorobenzene	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	Hexachlorobutadiene (1,3-Hexachlorobutadiene)	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<20.0	µg/L
	8270	Hexachlorocyclopentadiene	<660	µg/kg	<660	µg/kg	<660 to <13,200	µg/kg			<10.0	µg/L
	8270	Hexachloroethane	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	Indeno(1,2,3-cd)pyrene	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	Isophorone	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	2-methyl-4,6-Dinitrophenol	<1,700	µg/kg	<1,700	µg/kg	<1,700 to <34,000	µg/kg			<1.0	µg/L
	8270	2-Methylnaphthalene	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	2-Methylphenol (o-Cresol, 2-Cresol)	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<1.0	µg/L
	8270	4-Methylphenol (p-Cresol, 4-Cresol)	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<1.0	µg/L
	8270	N-Nitroso-Di-n-propylamine	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	N-Nitrosodiphenylamine	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	Naphthalene	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	2-Nitroaniline	<1,700	µg/kg	<1,700	µg/kg	<1,700 to <34,000	µg/kg			<10.0	µg/L
	8270	3-Nitroaniline	<1,700	µg/kg	<1,700	µg/kg	<1,700 to <34,000	µg/kg			<10.0	µg/L
	8270	4-Nitroaniline	<1,700	µg/kg	<1,700	µg/kg	<1,700 to <34,000	µg/kg			<10.0	µg/L
	8270	Nitrobenzene (NB)	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	4-Nitrophenol	<1,700	µg/kg	<1,700	µg/kg	<1,700 to <34,000	µg/kg			<1.0	µg/L
	8270	2-Nitrophenol (o-Nitrophenol)	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<1.0	µg/L
	8270	Pentachlorophenol	<1,700	µg/kg	<1,700	µg/kg	<1,700 to <34,000	µg/kg			<b>7.85</b>	µg/L
	8270	Phenanthrene	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	Phenol	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<1.0	µg/L
	8270	Pyrene	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	1,2,4-Trichlorobenzene	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<10.0	µg/L
	8270	2,4,5-Trichlorophenol	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<1.0	µg/L
	8270	2,4,6-Trichlorophenol	<330	µg/kg	<330	µg/kg	<330 to <6,600	µg/kg			<1.0	µg/L
Polynuclear	8310	Acenaphthene	<100	µg/kg	<b>380</b>	µg/kg						
Aromatic	8310	Acenaphthylene	<50.0	µg/kg	<50 to <250	µg/kg						
Hydrocarbons	8310	Anthracene	<2.0	µg/kg	<b>2</b>	µg/kg						
(PAHs)	8310	Benzo(a)anthracene (Benzo(a)anthracene)	<5.0	µg/kg	<5.0 to <25.0	µg/kg						
	8310	Benzo(a)pyrene	<5.0	µg/kg	<5.0 to <25.0	µg/kg						
	8310	Benzo(b)fluoranthene	<b>24</b>	µg/kg	<2.0 to <10.0	µg/kg						
	8310	Benzo(ghi)perylene	<7.0	µg/kg	<7.0 to <35.0	µg/kg						
	8310	Benzo(k)fluoranthene	<2.0	µg/kg	<2.0 to <10.0	µg/kg						
	8310	Chrysene	<b>28</b>	µg/kg	<5.0 to <25.0	µg/kg						
	8310	Dibenzo(a,h)anthracene	<17.0	µg/kg	<17.0 to <85.0	µg/kg						
	8310	Fluoranthene	<5.0	µg/kg	<b>30</b>	µg/kg						
	8310	Fluorene	<10.0	µg/kg	<10.0 to <50.0	µg/kg						
	8310	Indeno(1,2,3-cd)pyrene	<5.0	µg/kg	<5.0 to <25.0	µg/kg						
	8310	Naphthalene	<50.0	µg/kg	<b>71</b>	µg/kg						
	8310	Phenanthrene	<4.0	µg/kg	<b>40</b>	µg/kg						
	8310	Pyrene	<10.0	µg/kg	<b>130</b>	µg/kg						
Organochlorine	8081A	Aldrin	<2.0	µg/kg	<2.0	µg/kg						
Pesticides	8081A	alpha-Hexachlorocyclohexane (Alpha-BHC)	<2.0	µg/kg	<2.0	µg/kg						
	8081A	Beta-Hexachlorocyclohexane (Beta-BHC)	<2.0	µg/kg	<2.0	µg/kg						
	8081A	alpha-Chlordane	<2.0	µg/kg	<2.0	µg/kg						

**Table 5.25 (Page 4 of 4)**  
**Summary of COPCs, Maximum Concentrations, and Analytical Methods Used in Each Medium**  
**Mission Bay Landfill, San Diego, California**

Type of Constituent of Potential Concern	Analytical Method	Analyte	Sample Media											
			Surface Soils	Units	Sediment	Units	Subsurface Soil	Units	Landfill Gas/ Near Surface Emission/ Surface Emission	Units	Ground-water	Units		
	8081A	4,4'-DDD (DDD)	<4.0	µg/kg	<4.0	µg/kg								
	8081A	4,4'-DDE (DDE)	<4.0	µg/kg	<4.0	µg/kg								
	8081A	4,4'-DDT (DDT)	<4.0	µg/kg	<4.0	µg/kg								
	8081A	delta-Hexachlorocyclohexane (Delta-BHC)	<2.0	µg/kg	<2.0	µg/kg								
	8081A	Dieldrin	<4.0	µg/kg	<4.0	µg/kg								
	8081A	Endosulfan I	<2.0	µg/kg	<2.0	µg/kg								
	8081A	Endosulfan II	<4.0	µg/kg	<4.0	µg/kg								
	8081A	Endosulfan sulfate	<4.0	µg/kg	<4.0	µg/kg								
	8081A	Endrin	<4.0	µg/kg	<4.0	µg/kg								
	8081A	Endrin aldehyde	<4.0	µg/kg	<4.0	µg/kg								
	8081A	gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	<2.0	µg/kg	<2.0	µg/kg								
	8081A	Heptachlor	<2.0	µg/kg	<2.0	µg/kg								
	8081A	Heptachlor epoxide	<2.0	µg/kg	<2.0	µg/kg								
	8081A	Methoxychlor	<17.0	µg/kg	<17.0	µg/kg								
	8081A	Toxaphene	<170	µg/kg	<170	µg/kg								
	8081A	Gamma-Chlordane	<2.0	µg/kg	<2.0	µg/kg								
	8081A	Endrin ketone	<4.0	µg/kg	<4.0	µg/kg								
Polychlorinated	8082A	Aroclor-1016 (PCB-1016)	<33.0	µg/kg	<33.0	µg/kg								
Biphenyls	8082A	Aroclor-1221 (PCB-1221)	<67.0	µg/kg	<67.0	µg/kg								
(PCBs)	8082A	Aroclor-1232 (PCB-1232)	<33.0	µg/kg	<33.0	µg/kg								
	8082A	Aroclor-1242 (PCB-1242)	<33.0	µg/kg	<33.0	µg/kg								
	8082A	Aroclor-1248 (PCB-1248)	<33.0	µg/kg	<33.0	µg/kg								
	8082A	Aroclor-1254 (PCB-1254)	<33.0	µg/kg	<33.0	µg/kg								
	8082A	Aroclor-1260 (PCB-1260)	<33.0	µg/kg	<33.0	µg/kg								
Metals	6010B/7471A	Antimony	<b>1.45</b>	mg/kg	<b>0.56</b>	mg/kg	<b>1.25</b>	mg/kg						
	6010B/7471A	Arsenic	<b>5.2</b>	mg/kg	<b>6.39</b>	mg/kg	<b>49.9</b>	mg/kg						
	6010B/7471A	Barium	<b>417</b>	mg/kg	<b>98.6</b>	mg/kg	<b>361</b>	mg/kg						
	6010B/7471A	Beryllium	<0.50	mg/kg	<b>0.98</b>	mg/kg	<0.50	mg/kg						
	6010B/7471A	Cadmium	<0.50	mg/kg	<0.5	mg/kg	<b>11</b>	mg/kg						
	6010B/7471A	Chromium	<b>26.8</b>	mg/kg	<b>15.3</b>	mg/kg	<b>240</b>	mg/kg						
	6010B/7471A	Cobalt	<b>8.97</b>	mg/kg	<b>17</b>	mg/kg	<b>28.9</b>	mg/kg						
	6010B/7471A	Copper	<b>16</b>	mg/kg	<b>27.3</b>	mg/kg	<b>510</b>	mg/kg						
	6010B/7471A	Lead	<b>17.9</b>	mg/kg	<b>87.7</b>	mg/kg	<b>594</b>	mg/kg						
	6010B/7471A	Mercury	<0.20	mg/kg	<0.20	mg/kg	<0.20	mg/kg						
	6010B/7471A	Molybdenum	<b>1.58</b>	mg/kg	<b>2.27</b>	mg/kg	<b>38.4</b>	mg/kg						
	6010B/7471A	Nickel	<b>13.4</b>	mg/kg	<b>17.1</b>	mg/kg	<b>231</b>	mg/kg						
	6010B/7471A	Selenium	<0.50	mg/kg	<0.5	mg/kg	<0.50	mg/kg						
	6010B/7471A	Silver	<0.50	mg/kg	<0.5	mg/kg	<0.50	mg/kg						
	6010B/7471A	Thallium	<0.50	mg/kg	<0.5	mg/kg	<0.50	mg/kg						
	6010B/7471A	Vanadium	<b>72.1</b>	mg/kg	<b>32.2</b>	mg/kg	<b>90.5</b>	mg/kg						
	6010B/7471A	Zinc	<b>56.6</b>	mg/kg	<b>139</b>	mg/kg	<b>811</b>	mg/kg						
	7199	Hexavalent Chromium	<b>0.75</b>	mg/kg	<b>0.27</b>	mg/kg	<b>0.65</b>	mg/kg				<5.0	µg/L	
Cyanide	9014	Total Cyanide	<2.5	mg/kg	<2.5	mg/kg								
Metals	1631	Mercury										<b>0.109</b>	µg/L	
(Ultra Low	1669/1640	Beryllium										<b>0.0593</b>	µg/L	
Level Detection)	1669/1640	Vanadium										<b>52.4</b>	µg/L	
	1669/1640	Chromium										<b>16.7</b>	µg/L	
	1669/1640	Cobalt										<b>18.9</b>	µg/L	
	1669/1640	Nickel										<b>34.2</b>	µg/L	
	1669/1640	Copper										<b>21.8</b>	µg/L	
	1669/1640	Zinc										<b>429</b>	µg/L	
	1669/1640	Arsenic										<b>19.6</b>	µg/L	
	1669/1640	Selenium										<b>1.58</b>	µg/L	
	1669/1640	Molybdenum										<b>85.6</b>	µg/L	
	1669/1640	Silver										<b>2.27</b>	µg/L	
	1669/1640	Cadmium										<b>0.347</b>	µg/L	
	1669/1640	Antimony										<b>0.889</b>	µg/L	
	1669/1640	Barium										<b>4,900</b>	µg/L	
	1669/1640	Thallium										<b>0.0671</b>	µg/L	
	1669/1640	Lead										<b>1.9</b>	µg/L	
Associated Table Numbers			5.14		5.16		5.12, 5.13, 5.18		5.6 - 5.10			5.20, 5.21, 5.24		

**Notes:**  
Subsurface soils media grouping comprised of soil boring and monitoring well installation soil samples.  
Groundwater media grouping comprised of soil boring groundwater samples, monitoring well groundwater samples, and drive point pore water samples.  
% (v/v) = percentage by volume of vapor  
ppm (v/v) = parts per million by volume of vapor  
ppb (v/v) = parts per billion by volume of vapor  
mg/kg = milligrams per kilogram  
µg/kg = micrograms per kilogram  
The semivolatile organic compound (SVOC) detection limit ranges reported for subsurface soil result from the dilution of two samples during analysis: 1) Soil sample SCS3-10' (10X dilution), 2) Soil sample SCS3-5' (20X dilution).  
The polynuclear aromatic hydrocarbon (PAH) detection limit range reported for sediment results from the dilution of two samples during analysis: 1) Sediment 4 (5X dilution), 2) Sediment 5 (5X dilution).  
Results in **boldface** indicate the highest reported concentration in all samples within each sample medium.  
Greyed out areas indicate that sample medium was not analyzed for corresponding analyte as described in the workplan and report.

**Table 6.1**  
**Summary of LFG, Near-Surface, and Surface Emission HVOC Sampling Results**  
**Mission Bay Landfill**  
**San Diego, California**

	Tetrachloroethene	Trichloroethene	trans-1,2-Dichloroethene	1,2-Dichloroethane	Vinyl chloride		Vinyl chloride	SUR: LFG ratio
Sample ID	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)		ppb(v/v)	
MB1-LFG	<17	<17	<17	<17	<b>18</b>		<b>18</b>	0.06
MB1-SUR	<2	<2	<2	<2	<2		1	
MB2-LFG	<15	<15	<15	<15	<b>39</b>		<b>39</b>	0.03
MB2-SUR	<2	<2	<2	<2	<2		1	
MB3-LFG	<2	<2	<2	<2	<2		ND	
MB3-SUR	<2	<2	<2	<2	<2			
MB4-LFG	<3.5	<3.5	<3.5	<3.5	<3.5		ND	
MB4-SUR	<3.6	<3.6	<3.6	<3.6	<3.6			
MB5-LFG	<3.9	<3.9	<3.9	<3.9	<b>5.7</b>		<b>5.7</b>	0.18
MB5-SUR	<2	<2	<2	<2	<2		1	
MB6-LFG	<3.6	<3.6	<3.6	<3.6	<b>20</b>		<b>20</b>	0.55
MB6-SUR	<2	<2	<2	<2	<b>11</b>		<b>11</b>	
MB7-LFG	<3.8	<3.8	<3.8	<3.8	<b>16</b>		<b>16</b>	0.47
MB7-SUR	<2	<2	<2	<2	<b>7.5</b>		<b>7.5</b>	
MB8-LFG	<7.1	<b>9.1</b>	<7.1	<7.1	<b>56</b>		<b>56</b>	0.11
MB8-SUR	<2	<b>3.8</b>	<2	<2	<b>6</b>		<b>6</b>	
MB9-LFG	<3.7	<b>4</b>	<3.7	<3.7	<b>50</b>		<b>50</b>	0.26
MB9-SUR	<2	<2	<2	<2	<b>13</b>		<b>13</b>	
MB10-LFG	<4.3	<4.3	<4.3	<4.3	<b>8.7</b>		<b>8.7</b>	0.11
MB10-SUR	<2	<2	<2	<2	<2		1	
GRID A1,B1-B4	<0.2	<0.2	<0.2	<0.2	<0.2		avg	0.22
GRID I1	<0.2	<0.2	<0.2	<0.2	<0.2			
GRID L2	<0.2	<0.2	<0.2	<0.2	<0.2			
J2c (COMPOSITE (J2a + J2b))	<0.2	<0.2	<0.2	<0.2	<0.2			
N1c (COMPOSITE (N1a + N1b))	<0.2	<0.2	<0.2	<0.2	<0.2			
N3c (COMPOSITE (N3a + N3b))	<0.2	<0.2	<0.2	<0.2	<0.2			
<b># HITS</b>	0	3	0	0	12			
<b># SAMPLES</b>	26	26	26	26	26			
<b>MAX</b>	0	9.1	0	0	56			
<b>MIN</b>	0	3.8	0	0	5.7			

**Notes:**

- < indicates detection at less than the laboratory reporting limit.
- Results reported in units of parts per billion by volume in vapor (ppb [v/v]).
- Reported concentrations in **boldface** denote a detection above the laboratory detection limit for that analyte
- Vinyl chloride ratio calculated using 1/2 of detection limit for MB1, MB2, MB5, and MB10.

**TABLE 8.1**  
**SUMMARY OF ANALYTICAL METHODS USED**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

Constituent Suite	Analytical Method
<b>Soil</b>	
semi-volatile organic compounds (SVOCs)	EPA Method 8270C
polycyclic aromatic hydrocarbons (PAHs)	EPA Method 8310
polychlorinated biphenyls (PCBs)	EPA Method 8082
metals	EPA Method 6010B/7471A, CCR Title 22 Metals (TTLC)
hexavalent chromium	EPA Method 7199
total cyanide	EPA Method 9014
chlorinated herbicides	EPA Method 8151A
organochlorine pesticides	EPA Method 8081A
<b>Groundwater</b>	
volatile organic compounds (vocs)	EPA 8260B
metals	EPA 6000/7000 Series
<b>Soil Gas</b>	
volatile organic compounds	EPA TO-15
<b>Landfill Gas</b>	
AP-42 hazardous air pollutants	EPA TO-15
methane	Landtec GEM 500 Gas Analyzer
hydrogen sulfide	EPA TO-15, Draeger Tubes

**TABLE 8.2**  
**SUMMARY LIST OF CHEMICALS OF POTENTIAL CONCERN**  
**AND EXPOSURE POINT CONCENTRATIONS (EPCs) - SOILS**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

Inorganics			Organics		
COPC	EPC 0-5 Foot Interval (mg/kg)	EPC 0-10 Foot Interval (mg/kg)	COPC	EPC 0-5 Foot Interval (mg/kg)	EPC 0-10 Foot Interval (mg/kg)
Antimony	7.64E-01	1.11E+00	1,4-Dichlorobenzene	NA	3.14E-01
Arsenic	3.21E+00	9.97E+00	2-Methylnaphthalene	NA	1.93E-01
Barium	1.45E+02	1.41E+02	Anthracene	1.98E-03	4.30E-03
Beryllium	NA	3.21E-01	Benzo(a)anthracene	7.68E-03	1.03E-01
Cadmium	NA	4.55E-01	Benzo(a)pyrene	9.75E-03	3.70E-02
Chromium	2.01E+01	3.46E+01	Benzo(a)pyrene Equivalent	1.16E-02	7.00E-02
Hexavalent Chromium	4.30E-01	3.85E-01	Benzo(b)fluoranthene	8.15E-03	9.51E-02
Cobalt	8.34E+00	1.25E+01	Benzo(ghi)perylene	1.34E-02	3.64E-02
Copper	1.93E+01	4.67E+01	Benzo(k)fluoranthene	3.37E-03	1.30E-01
Lead	1.04E+01	2.08E+01	Bis(2-ethylhexyl)phthalate	NA	4.56E-01
Mercury	NA	3.23E+02	Butyl Benzyl Phthalate	NA	2.17E+00
Molybdenum	7.28E-01	1.06E+00	Chrysene	7.68E-03	1.98E-01
Nickel	9.56E+00	1.73E+01	Dibenzo(a,h)anthracene	1.13E-02	1.13E-02
Silver	NA	3.70E-01	Dibutylphthalate	NA	1.11E-01
Vanadium	4.69E+01	6.10E+01	Diethylphthalate	NA	1.29E-01
Zinc	6.75E+01	2.13E+02	Diphenylamine	NA	1.24E+00
			Fluorene	NA	3.41E-01
			Fluoranthene	1.21E-02	8.12E-02
			Phenanthrene	5.55E-03	3.01E-01
			Pyrene	1.51E-02	7.88E-02
			4,4-DDD	NA	1.03E-02
			4,4-DDE	NA	1.52E-02
			Aldrin	NA	3.28E-02
			alpha-BHC	NA	1.18E-02
			alpha-Endosulfan I	NA	3.23E-02
			Beta-Endosulfan	NA	7.02E-03
			Dieldrin	NA	3.52E-02
			Heptachlor	NA	2.78E-02

**Notes:**  
EPC = the lesser of the maximum or 95UCLM concentration  
NA = Not detected or analyzed in soil depth interval.

**TABLE 8.3**  
**SUMMARY LIST OF CHEMICALS OF POTENTIAL CONCERN**  
**AND EXPOSURE POINT CONCENTRATIONS (EPCs)**  
**LANDFILL GAS**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

<b>Organics</b>	
<b>COPC</b>	<b>EPC (<math>\mu\text{g}/\text{m}^3</math>)</b>
Hydrogen Sulfide	9.45E-01
Total Non-Methane Hydrocarbons as Methane	2.04E+01
1,2-Dichlorobenzene	5.90E-03
1,4-Dichlorobenzene	3.26E-02
2-Butanone (Methyl Ethyl Ketone)	3.99E-03
Acetone	9.66E-03
Chlorobenzene	5.61E-03
Chlorodifluoromethane	2.76E-02
Chloroethane (Ethyl Chloride)	7.59E-04
Dichlorodifluoromethane (Freon 12)	3.18E-02
Dichlorofluoromethane (Freon 21)	1.57E-03
Ethylbenzene	1.19E-01
n-Butane	3.86E-01
n-Hexane	5.61E-02
Pentane	1.50E-01
Propane	6.72E-01
Trichloroethene	1.66E-03
Vinyl chloride	5.19E-03
Xylenes	2.15E-02

**Notes:**  
EPC = the lesser of the maximum or 95UCLM concentration

**TABLE 8.4**  
**SUMMARY LIST OF CHEMICALS OF POTENTIAL CONCERN**  
**AND EXPOSURE POINT CONCENTRATIONS (EPCs)**  
**NEAR-SURFACE SOIL VAPOR SAMPLES**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

Organics	
COPC	EPC ( $\mu\text{g}/\text{m}^3$ )
1,2-Dichlorobenzene	2.19E+02
1,4-Dichlorobenzene	1.33E+03
2-Butanone (MEK)	3.09E+02
Acetone	1.04E+03
Bromodichloromethane	8.87E+01
Chlorobenzene	1.87E+02
Chlorodifluoromethane	6.46E+02
Chloroform	4.32E+02
Dichlorodifluoromethane	1.80E+03
Dichlorofluoromethane	4.43E+03
Ethylbenzene	1.91E+03
Trichloroethene	8.32E+01
Vinyl chloride	1.46E+02
Total Xylenes	6.22E+03

**Notes:**

EPC = the lesser of the maximum or 95UCLM concentration

**TABLE 8.5**  
**SUMMARY LIST OF CHEMICALS OF POTENTIAL CONCERN**  
**AND EXPOSURE POINT CONCENTRATIONS (EPCs) - GROUNDWATER**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

Inorganics		Organics	
COPC	EPC Groundwater (mg/L)	COPC	EPC Groundwater (mg/L)
Antimony	1.00E-02	1,2-Dichloropropane	2.32E-07
Arsenic	6.10E-03	1,4-Dichlorobenzene	4.02E-07
Barium	1.06E+00	Benzene	1.98E-07
Beryllium	1.90E-05	cis-1,2-Dichloroethene	7.79E-07
Cadmium	1.59E-04	Diethyl Ether	7.28E-07
Chromium	1.46E-02	Methylene Chloride	7.90E-07
Cobalt	8.72E-03	Methyl Tert-Butyl Ether	8.26E-07
Copper	6.64E-03	Toluene	3.64E-07
Iron	9.63E-01	Vinyl Chloride	5.12E-07
Lead	1.10E-02		
Mercury	2.80E-05		
Molybdenum	1.98E-01		
Nickel	1.76E-02		
Selenium	6.44E-03		
Silver	7.98E-04		
Vanadium	3.77E-02		
Zinc	2.00E+00		

**Notes:**

EPC = Exposure point concentration; the lesser of the maximum of 95UCLM

**TABLE 8.6**  
**EXPOSURE PARAMETERS**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

Exposure Parameter	Receptor Population						Units	Reference
	Commercial Worker	Construction Worker	Recreational User		Swimmer	Transient		
			Adult	Child				
<b>General Parameters</b>								
Body Weight	70	70	15	35	70	kg	DTSC (1992, 1994, 1996)	
Averaging Time (carcinogens)	25,550	25,550	25,550	25,550	25,550	days	DTSC (1992, 1994, 1996)	
Averaging Time (noncarcinogens)	9,125	365	2,190	1,825	1,825	days	DTSC (1992, 1994, 1996)	
Conversion Factor	1.00E-06	1.00E-06	1.0E-06	1.0E-06	1.0E-06	kg/mg		
Exposure Frequency	250	250	156 <sup>a</sup>	60	350	days/year	DTSC (1992, 1994, 1996)	
Exposure Duration	25	1	24	5	5	years	DTSC (1992, 1994, 1996)	
<b>Soil Ingestion Pathway</b>								
Soil Ingestion Rate	50	330	100	NA	100	mg/day	OEHHA (2005), USEPA (2001)	
<b>Dermal Contact With Soil</b>								
Skin Surface Area	5,700	5,700	2,800	NA	5,700	cm <sup>2</sup> /event	DTSC (2000), OEHHA (2005)	
Soil-to-Skin Adherence Factor	0.07	0.8	0.07	NA	0.8	mg/cm <sup>2</sup>	DTSC (2000)	
Fraction of Chemical Dermal Absorbed <sup>1</sup>	Chemical-Specific	Chemical-Specific	Chemical-Specific	Chemical-Specific	Chemical-Specific	unitless	DTSC (1994)	
Soil Contact Exposure Frequency	250	250	156 <sup>a</sup>	NA	350	events/year	DTSC (2000)	
<b>Swimming</b>								
Skin Surface Area	NA	NA	NA	11,000	NA	cm <sup>2</sup>	USEPA (1997)	
Permeability Coefficient	NA	NA	NA	Chemical-Specific	NA	cm/hour		
Duration of Swimming Per Day of Occurrence	NA	NA	NA	2	NA	hours/day	See Text.	
Days of Swimming Per Year	NA	NA	NA	60	NA	days/year	See Text.	
Incidental Ingestion of Water	NA	NA	NA	0.025	NA	liters/hour	See Text.	
<b>Inhalation of Soil Particulates in Outdoor Air from Surface Soils and Landfill Gas</b>								
Particulate Emission Factor	1.32E+09	1.32E+09	1.32E+09	NA	1.32E+09	m <sup>3</sup> /kg	USEPA (2004)	
Inhalation Rate	20 <sup>b</sup>	20 <sup>b</sup>	3 <sup>a</sup>	NA	20 <sup>b</sup>	m <sup>3</sup> /hr	DTSC (1992, 1994, 1996)	
Conversion Factor	1.00E-03	1.00E-03	1.00E-03	1.00E-03	1.00E-03	mg/lug		
Site Visit Duration	NA	NA	1	NA	NA	hours/day	OEHHA (2005)	

**Notes:**

<sup>1</sup> Polynuclear aromatic hydrocarbons (PAHs) = 0.15; other organic chemicals = 0.10; other metals = 0.01 (DTSC, 1994)

<sup>a</sup>See text for a discussion of the source of these values.

<sup>b</sup>Units for this value only are m<sup>3</sup>/day.

**TABLE 8.7**  
**SUMMARY OF TOTAL RISKS**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

Receptor	Risk Assessment Results		Chemical Risk Driver	Relative Contribution to Total Risk	Exposure Pathway
<b>Commercial Worker</b>	Hazard Index:	1	--	--	--
	Cancer Risk	<b>2.31E-05</b>	Arsenic	77%	Direct Contact (Oral and Dermal)
<b>Construction Worker</b>	Hazard Index:	<b>4</b>	Mercury	93%	Direct Contact (Oral and Dermal)
	Cancer Risk	<b>5.78E-06</b>	Arsenic	86%	Direct Contact (Oral and Dermal)
<b>Adult Recreational User</b>	Hazard Index:	0.001	--	--	--
	Cancer Risk	<b>6.85E-06</b>	Arsenic	97%	Direct Contact (Oral and Dermal)
<b>Child Recreational User</b>	Hazard Index:	0.6	--	--	--
	Cancer Risk	<b>2.22E-05</b>	Arsenic	95%	Direct Contact (Oral and Dermal)
<b>Swimmer</b>	Hazard Index:	0.1	--	--	--
	Cancer Risk	<b>1.41E-06</b>	Arsenic	99%	Direct Contact (Oral and Dermal)
<b>Transient</b>	Hazard Index:	0.5	--	--	--
	Cancer Risk:	<b>4.63E-06</b>	Arsenic	94%	Direct Contact (Oral and Dermal)

**Notes:**  
 Bold text indicates exceedance of California Department of Toxic Substances Control (DTSC) and Office of Environmental Health Hazard Assessment (OEHHA) negligible cancer risk threshold of 1E-06 and non-cancer hazard index threshold of "1".

**TABLE 8.8**  
**HAZARD GAS CONCENTRATIONS IN LANDFILL GAS**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

Sample Number	CH <sub>4</sub> (% in landfill gas)	H <sub>2</sub> S (ppm in landfill gas)
MB-1A	---	---
MB-2A	12	0
MB-3A	42.9	0.031
MB-4A	46.7	0.023
MB-1B	1.9	0.04
MB-2B	16.4	0.23
MB-3B	8.9	0.035
MB-4B	35	0.043
MB-1C	43.7	2.1
MB-2C	3.4	0.007
MB-3C	21.3	0.028
MB-4C	16.5	0.013
MB-1D	34.8	0.006
MB-2D	38.5	0.007
MB-3D	1.9	0
MB-1E	14.2	0.001
MB-2E	40	1.45
MB-3E	46.6	1.6
MB-1F	50.4	0.18
MB-2F	10.7	0.013
MB-3F	2.5	0.001
MB-1G	6.1	0.17
MB-2G	57.3	4.5
MB-3G	3.1	0.002
MB-1H	24.5	0.33
MB-2H	35.7	0.036
MB-1I	38.1	0.045
MB-2I	42.3	0.27
MB-1J	19.8	0.19
MB-2J	39.5	3.1
MB-1K	---	---
MB-2K	9.2	0.03
MB-1L	16.9	3.7
MB-2L	14.9	0.93
MB-3L	2.8	0.005
MB-1M	41	0.043
MB-2M	22.9	21
MB-3M	20.9	0.001
MB-4M	2.1	0.001
MB-1N	24.7	0.29
MB-2N	14.2	1.8
MB-3N	1.6	0
MB-4N	0.7	0

**TABLE 8.8**  
**HAZARD GAS CONCENTRATIONS IN LANDFILL GAS**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

MB-1O	8.9	0.26
MB-2O	7	0.051
MB-3O	13.5	0.57
MB-4O	23.1	0.37
MB-1P	1.6	0.001
MB-2P	---	---

**Notes:**

1. Samples collected by SCS from May 24, 2004 to June 1, 2004.

**TABLE 8.9**  
**HAZARD GAS CONCENTRATIONS IN AMBIENT AIR**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

<b>Sample ID</b>	<b>Methane (% in ambient air)</b>
GRID A1,B1-B4	<0.0005
GRID I1	<0.0005
GRID L2	<0.0005
J2c (COMPOSITE (J2a + J2b))	<0.0005
N1c (COMPOSITE (N1a + N1b))	<0.0005
N3c (COMPOSITE (N3a + N3b))	<0.0005

**TABLE 9.1**  
**INITIAL LIST OF CHEMICALS OF POTENTIAL ECOLOGICAL CONCERN (COPEC) AND EXPOSURE POINT**  
**CONCENTRATIONS (EPC)**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

Inorganics		Organics			
COPEC in soil	EPC <sup>1</sup> (mg/kg)	COPEC in soil	EPC (µg/kg)	COPEC in landfill gas	EPC (µg/m <sup>3</sup> )
Antimony	7.64E-01	Anthracene	1.98E+00	1,2-Dichlorobenzene	2.19E+02
Arsenic	3.21E+00	Benzo(a)anthracene	7.68E+00	1,4-Dichlorobenzene	1.33E+03
Barium	1.45E+02	Benzo(a)pyrene	9.75E+00	2-Butanone (MEK)	3.09E+02
Chromium	2.01E+01	Benzo(b)fluoranthene	1.16E+01	Acetone	1.04E+03
Hexavalent Chromium	4.30E-01	Benzo(ghi)perylene	8.15E+00	Bromodichloromethane	8.87E+01
Cobalt	8.34E+00	Benzo(k)fluoranthene	1.34E+01	Chlorobenzene	1.87E+02
Copper	1.93E+01	Chrysene	3.37E+00	Chlorodifluoromethane	6.46E+02
Lead	1.04E+01	Dibenzo(a,h)anthracene	7.68E+00	Chloroform	4.32E+02
Molybdenum	7.28E-01	Fluoranthene	1.13E+01	Dichlorodifluoromethane	1.80E+03
Nickel	9.56E+00	Phenanthrene	1.21E+01	Dichlorofluoromethane	4.43E+03
Vanadium	4.69E+01	Pyrene	5.55E+00	Ethylbenzene	1.91E+03
Zinc	6.75E+01			Trichloroethene	8.32E+01
				Vinyl chloride	1.46E+02
				Total Xylenes	6.22E+03

<sup>1</sup>EPC = the lesser of the maximum or 95UCLM concentration.

**TABLE 9.2**  
**COMPARISON OF SOIL CHEMICALS OF POTENTIAL ECOLOGICAL CONCERN (COPEC) TO ECOTOXICOLOGICAL**  
**SCREENING BENCHMARKS**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

COPEC	EPC <sup>a</sup> (mg/kg)	ESB <sup>b</sup> (mg/kg)	ESB Basis	Description	ESB Reference
<b>Inorganics</b>					
Antimony	0.8	3.5	NA	ESV <sup>d</sup>	USEPA (2001)
Arsenic	3.2	18	Plants	Eco-SSL	USEPA (2005a)
Barium	145	330	Invertebrates	Eco-SSL	USEPA (2005b)
Chromium (total)	20.1	26 <sup>e</sup>	Birds	Eco-SSL	USEPA (2005c)
Chromium (VI)	0.4	81	Mammals	Eco-SSL	USEPA (2005c)
Cobalt	8	13	Plants	Eco-SSL	USEPA (2005d)
Copper	19	40	NA	ESV	USEPA (2001)
Lead	10	11	Birds	Eco-SSL	USEPA (2005e)
Molybdenum	0.7	2	Plants	ESV	USEPA (2001)
Nickel	10	30	Plants	ESV	USEPA (2001)
<b>Vanadium</b>	<b>47</b>	<b>7.8</b>	Birds	Eco-SSL	USEPA (2005f)
<b>Zinc</b>	<b>67</b>	<b>8.5</b>	Birds	PRG	Efroymsen et al. (1997)
<b>Organics</b>					
Anthracene	0.002	1 <sup>f</sup>	NA	ESV	USEPA (2001)
Benzo(a)anthracene	0.008	1	NA	ESV	USEPA (2001)
Benzo(a)pyrene	0.01	1	NA	ESV	USEPA (2001)
Benzo(b)fluoranthene	0.01	1	NA	ESV	USEPA (2001)
Benzo(ghi)perylene	0.008	1	NA	ESV	USEPA (2001)
Benzo(k)fluoranthene	0.01	1	NA	ESV	USEPA (2001)
Chrysene	0.003	1	NA	ESV	USEPA (2001)
Dibenzo(a,h)anthracene	0.008	1	NA	ESV	USEPA (2001)
Fluoranthene	0.01	1	NA	ESV	USEPA (2001)
Phenanthrene	0.01	1	NA	ESV	USEPA (2001)
Pyrene	0.006	1	NA	ESV	USEPA (2001)

NOTES:

NA = Not available.

<sup>a</sup>EPC = Exposure point concentration.

<sup>b</sup>ESB = Ecotoxicological screening benchmark for chemicals in soil.

<sup>c</sup>Eco-SSL = Ecological soil screening level.

<sup>d</sup>ESV = Ecological screening value.

<sup>e</sup>For total chromium the lowest ESB for either trivalent or hexavalent chromium was used.

<sup>f</sup>ESB of 1 is for the sum of all polynuclear aromatic hydrocarbons (PAHs).

Bolded values indicate a chemical of potential ecological concern.

**TABLE 9.3**  
**LIST OF FINAL CHEMICALS OF POTENTIAL**  
**ECOLOGICAL CONCERN (COPEC)**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

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***Inorganics***

Vanadium  
Zinc

***Organics*<sup>1</sup>**

1,2-Dichlorobenzene  
1,4-Dichlorobenzene  
2-Butanone (MEK)  
Acetone  
Bromodichloromethane  
Chlorobenzene  
Chlorodifluoromethane  
Chloroform  
Dichlorodifluoromethane  
Dichlorofluoromethane  
Ethylbenzene  
Trichloroethene  
Vinyl chloride  
Total Xylenes

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<sup>1</sup>All final organic COPECS were detected in landfill gas only.

**TABLE 9.4  
HABITATS AND SPECIES ASSOCIATION AT THE MISSION BAY LANDFILL  
MISSION BAY LANDFILL  
SEA WORLD DRIVE  
SAN DIEGO, CALIFORNIA**

Habitat Type	Percent of Site Covered	Common Plant Species		Common Animal Species	
		Common Name	Scientific Name	Common Name	Scientific Name
Disturbed	36	hottentot-fig crystalline iceplant slender-leaved iceplant laurel sumac pineapple weed coyote brush broom baccharis lawndaisy sand peppergrass London rocket stickwort starwort Australian saltbush five-hook bassia lamb's quarters Russian thistle spotted spurge white sweetclover red-stern filaree Perez rosemary tree tobacco four-petal European tamarisk slender wild oat ripgut grass red brome pampas grass fountain grass smilo grass annual beard grass	<i>Carpobrotus edulis</i> <i>Mesembryanthemum crystallinum</i> <i>Mesembryanthemum nodiflorum</i> <i>Malosma laurina</i> <i>Arblyopappus pusillus</i> <i>Baccharis pilularis</i> <i>Baccharis sarothroides</i> <i>Bellis perennis</i> <i>Lepidium lasiocarpum</i> <i>Sisymbrium irio</i> <i>Spergula arvensis</i> <i>Atriplex semibaccata</i> <i>Bassia hyssopifolia</i> <i>Chenopodium album</i> <i>Salsola tragus</i> <i>Chamaesyce maculata</i> <i>Melilotus albus</i> <i>Erodium cicutarium</i> <i>Limonium perezii</i> <i>Nicotiana glauca</i> <i>Tamarix parviflora</i> <i>Avena barbata</i> <i>Bromus diandrus</i> <i>Bromus madritensis</i> <i>Cortaderia jubata</i> <i>Pennisetum setaceum</i> <i>Piptatherum miliaceum</i> <i>Polypogon monspeliensis</i>	cabbage white lady western fence lizard side-blotched lizard northern harrier rock pigeon mourning dove white-throated swift	<i>Pteris rapae</i> <i>Vanessa</i> <i>Sceloporus occidentalis</i> <i>Uta stansburiana</i> <i>Circus cyaneus</i> <i>Columba livia</i> <i>Zenaidura macroura</i> <i>Aeronautes saxatalis</i>

TABLE 9.4 (continued)  
HABITATS AND SPECIES ASSOCIATIONS AT THE MISSION BAY LANDFILL  
MISSION BAY LANDFILL  
SEA WORLD DRIVE  
SAN DIEGO, CALIFORNIA

Habitat Type	Percent of Site Covered	Common Plant Species		Common Animal Species	
		Common Name	Scientific Name	Common Name	Scientific Name
Non-native Vegetation	22	Torrey pine pine lemonadeberry Brazilian pepper tree cudweed pride of madeira purple rock-rose Sydney wattle Mexican palo verde aloe ngaio* Perez rosemary lantana California fan palm broad-leaved cattail	<i>Pinus torreyana</i> <i>Pinus</i> <i>Rhus integrifolia</i> <i>Schinus terebinthifolius</i> <i>Gnaphalium luteo-album</i> <i>Echium fastuosum</i> <i>Cistus incanus</i> <i>Acacia longifolia</i> <i>Parkinsonia aculeata</i> <i>Aloe</i> <i>Myoporum laetum</i> <i>Limonium perezii</i> <i>Lantana montevidens</i> <i>Washingtonia filifera</i> <i>Typha latifolia</i>	killdeer mourning dove Anna's hummingbird cliff swallow bushtit northern mockingbird European starling house finch desert cottontail	<i>Charadrius vociferous</i> <i>Zenaida macroura</i> <i>Calypte anna</i> <i>Petrochelidon pyrrhonota</i> <i>Psaltirparus minimus</i> <i>Mimus polyglottos</i> <i>Sturnus vulgaris</i> <i>Carpodacus mexicanus</i> <i>Sylvilagus audubonii</i>

\* = Dominant species

TABLE 9.4 (continued)  
HABITATS AND SPECIES ASSOCIATIONS AT THE MISSION BAY LANDFILL  
MISSION BAY LANDFILL  
SEA WORLD DRIVE  
SAN DIEGO, CALIFORNIA

Habitat Type	Percent of Site Covered	Common Plant Species		Common Animal Species	
		Common Name	Scientific Name	Common Name	Scientific Name
Southern Foredunes	9	hottentot-fig	<i>Carpobrotus edulis</i>	killdeer	<i>Charadrius vociferous</i>
		pineapple weed	<i>Amblyopappus pusillus</i>	California ground squirrel	<i>Spermophilus beecheyi</i>
		broom baccharis	<i>Baccharis sarothroides</i>		
		toCALote	<i>Centaurea melitensis</i>		
		sea-rocket	<i>Cakile maritima</i>		
		Nuttall's lotus	<i>Lotus nuttallianus</i>		
		red sand-verbena	<i>Abronia maritima</i>		
		California sun cup	<i>Camissonia bistorta</i>		
		beach evening primrose	<i>Camissonia cheiranthifolia</i>		
		Lewis' evening-primrose	<i>Camissonia lewisii</i>		
		spiny threecornerjack	<i>Ernex spinosa</i>		
		coast woolly-heads	<i>Nemacaulis denudata</i>		

TABLE 9.4 (continued)  
HABITATS AND SPECIES ASSOCIATIONS AT THE MISSION BAY LANDFILL  
MISSION BAY LANDFILL  
SEA WORLD DRIVE  
SAN DIEGO, CALIFORNIA

Habitat Type	Percent of Site Covered	Common Plant Species		Common Animal Species	
		Common Name	Scientific Name	Common Name	Scientific Name
Coastal Sage Scrub	7	California sagebrush coyote brush broom baccharis* California encelia* goldenbush* quailbush coastal deerweed Flat-top Buckwheat*	<i>Artemisia californica</i> <i>Baccharis pilularis</i> <i>Baccharis sarothroides</i> <i>Encelia californica</i> <i>Isocoma menziesii</i> <i>Atriplex lentiformis</i> <i>Lotus scoparius</i> <i>Eriogonum fasciculatum</i>	bush-tit California towhee California ground squirrel	<i>Psittiparus minimus</i> <i>Pipilo crissalis</i> <i>Spermophilus beecheyi</i>

\* = Dominant species

**TABLE 9.5**  
**ANIMAL SPECIES OBSERVED OR POTENTIALLY**  
**OCCURRING AT THE MISSION BAY LANDFILL**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

<i>Butterflies</i>	
Common Name	Scientific Name
cabbage white	<i>Pieris rapae</i>
lady	<i>Vanessa</i>
<i>Reptiles</i>	
Common Name	Scientific Name
side-blotched lizard	<i>Uta stansburiana</i>
western fence lizard	<i>Sceloporus occidentalis</i>
<i>Birds</i>	
Common Name	Scientific Name
Anna's hummingbird	<i>Calypte anna</i>
bush-tit	<i>Psaltriparus minimus</i>
California towhee	<i>Pipilo crissalis</i>
cliff swallow	<i>Petrochelidon pyrrhonota</i>
common raven	<i>Corvus corax</i>
European starling	<i>Sturnus vulgaris</i>
Forster's tern	<i>Sterna forsteri</i>
great blue heron	<i>Ardea herodias</i>
great egret	<i>Ardea alba</i>
horned lark	<i>Eremophila alpestris</i>
house finch	<i>Carpodacus mexicanus</i>
killdeer	<i>Charadrius vociferous</i>
least tern	<i>Sterna antillarum</i>
mallard	<i>Anas platyrhynchos</i>
mourning dove	<i>Zenaida macroura</i>
northern harrier	<i>Circus cyaneus</i>
northern mockingbird	<i>Mimus polyglottos</i>
northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>
red-tailed hawk	<i>Buteo jamaicensis</i>
rock pigeon	<i>Columba livia</i>
snowy egret	<i>Egretta thula</i>
western gull	<i>Larus occidentalis</i>
western meadowlark	<i>Sturnella neglecta</i>
white-throated swift	<i>Aeronautes saxatalis</i>
<i>Mammals</i>	
Common Name	Scientific Name
California ground squirrel	<i>Spermophilus beecheyi</i>
desert cottontail	<i>Sylvilagus audubonii</i>

**TABLE 9.6**  
**PLANT SPECIES OBSERVED OR POTENTIALLY OCCURING AT**  
**THE MISSION BAY LANDFILL**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

Common Name	Scientific Name
alkali heath	<i>Frankenia salina</i>
alkali weed	<i>Cressa truxillensis</i>
aloe	<i>Aloe</i>
annual beard grass	<i>Polypogon monspeliensis</i>
beach evening primrose	<i>Camissonia cheiranthifolia</i>
brass-buttons	<i>Cotula coronopifolia</i>
Brazilian pepper tree	<i>Schinus terebinthifolius</i>
bristly ox-tongue	<i>Picris echioides</i>
broad-leaved cattail	<i>Typha latifolia</i>
broom baccharis	<i>Baccharis sarothroides</i>
California encelia	<i>Encelia californica</i>
California fan palm	<i>Washingtonia filifera</i>
California sagebrush	<i>Artemisia californica</i>
California sun cup	<i>Camissonia bistorta</i>
coast woolly-heads	<i>Nemacaulis denudata</i>
coastal deerweed	<i>Lotus scoparius</i>
common sow thistle	<i>Sonchus oleraceus</i>
coyote brush	<i>Baccharis pilularis</i>
crystalline iceplant	<i>Mesembryanthemum crystallinum</i>
cudweed	<i>Gnaphalium luteo-album</i>
eucalyptus	<i>Eucalyptus</i>
Flat-top Buckwheat	<i>Eriogonum fasciculatum</i>
flax-leaf fleabane	<i>Conyza bonariensis</i>
fountain grass	<i>Pennisetum setaceum</i>
four-petal European tamarisk	<i>Tamarix parviflora</i>
garland	<i>Chrysanthemum coronarium</i>
goldenbush	<i>Isocoma menziesii</i>
hottentot-fig	<i>Carpobrotus edulis</i>
lantana	<i>Lantana montevidens</i>
laurel sumac	<i>Malosma laurina</i>
lawndaisy	<i>Bellis perennis</i>
lemonadeberry	<i>Rhus integrifolia</i>
Lewis' evening-primrose	<i>Camissonia lewisii</i>
London rocket	<i>Sisymbrium irio</i>
marsh jaumea	<i>Jaumea carnosa</i>

**TABLE 9.6 (Continued)**  
**PLANT SPECIES OBSERVED OR POTENTIALLY OCCURRING AT**  
**THE MISSION BAY LANDFILL**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

Common Name	Scientific Name
Mexican palo verde	<i>Parkinsonia aculeata</i>
mule fat	<i>Baccharis salicifolia</i>
ngaio	<i>Myoporum laetum</i>
Nuttall's lotus	<i>Lotus nuttallianus</i>
pampas grass	<i>Cortaderia jubata</i>
Perez rosemary	<i>Limonium perezii</i>
pine	<i>Pinus</i>
pineapple weed	<i>Amblyopappus pusillus</i>
pride of madeira	<i>Echium fastuosum</i>
purple rock-rose	<i>Cistus incanus</i>
quailbush	<i>Atriplex lentiformis</i>
red brome	<i>Bromus madritensis</i>
red sand-verbena	<i>Abronia maritima</i>
red-stern filaree	<i>Erodium cicutarium</i>
rippgut grass	<i>Bromus diandrus</i>
salt heliotrope	<i>Heliotropium curvassavicum</i>
sand peppergrass	<i>Lepidium lasiocarpum</i>
sea dahlia	<i>Coreopsis maritima</i>
sea-rocket	<i>Cakile maritima</i>
short-pod mustard	<i>Hirschfeldia incana</i>
slender wild oat	<i>Avena barbata</i>
slender-leaved iceplant	<i>Mesembryanthemum nodiflorum</i>
smilo grass	<i>Piptatherum miliaceum</i>
spiny rush	<i>Juncus acutus</i>
spiny threecornerjack	<i>Emex spinosa</i>
spotted spurge	<i>Chamaesyce maculata</i>
stickwort starwort	<i>Spergula arvensis</i>
Sydney wattle	<i>Acacia longifolia</i>
telegraph weed	<i>Heterotheca grandiflora</i>
tochalote	<i>Centaurea melitensis</i>
Torrey pine	<i>Pinus torreyana</i>
tree tobacco	<i>Nicotiana glauca</i>
western ragweed	<i>Ambrosia psilostachya</i>
white sweetclover	<i>Melilotus albus</i>

**TABLE 9.7**  
**ENDANGERED, THREATENED, SPECIAL, OR SENSITIVE SPECIES**  
**OBSERVED OR POTENTIALLY OCCURRING AT THE MISSION BAY LANDFILL**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

Species	Federal-List Endangered Species	CA-List Endangered Species	Federal-List Threatened Species	CA-List Threatened Species	California Special Plant or Animal List	Sensitive Species <sup>1</sup>
<b>Animals</b>						
northern harrier						X
least tern	X	X				X
<b>Plants</b>						
sea dahlia						X
woolly sea-blite						X
Nuttall's lotus						X
red sand-verbena						X
Lewis' evening-primrose						X
coast woolly-heads						X
spiny rush						X

<sup>1</sup> = CDFG, 2000a,b



**TABLE 9.9**  
**EXPOSURE PARAMETERS FOR ECOLOGICAL RECEPTORS**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

Species	Body Weight (kg)	Soil Ingestion (kg/day)	Inhalation Rate (m <sup>3</sup> /day)	Diet (kg/day)	Assumed Diet Composition	Home Range (Acres) <sup>d</sup>	Area Use Factor <sup>e</sup>
Ground squirrel	0.7 <sup>a</sup>	0.019	0.27	0.025	100% plant	0.6	1.0
Northern harrier	0.96 <sup>b</sup>	Negligible	NA	0.18 <sup>b</sup>	100% prey <sup>c</sup>	1060	0.14
Mourning dove	0.15 <sup>b</sup>	0.001 <sup>b</sup>	NA	0.052 <sup>b</sup>	100% plant	2560	0.06
Killdeer	0.071 <sup>a</sup>	0.003 <sup>f</sup>	NA	0.04 <sup>f</sup>	100% insects	8.2	1.0

NOTES:

<sup>a</sup>From OEHHA (2005).

<sup>b</sup>From USEPA (2001).

<sup>c</sup>Assumed to consist of 100% small mammals.

<sup>d</sup>All values from Zeiner et al. (1988).

<sup>e</sup>Area use factor = area of Mission Bay landfill (148 acres) divided by home range with a maximum value of 1. See text for additional discussion.

<sup>f</sup>From USEPA (2001). Soil ingestion rate for the spotted sandpiper was used, scaled to the killdeer body weight.

**TABLE 9.10**  
**TOXICITY REFERENCE VALUES (TRVs) FOR CHEMICALS OF POTENTIAL ECOLOGICAL CONCERN (COPECS)**  
MISSION BAY LANDFILL  
SEA WORLD DRIVE  
SAN DIEGO, CALIFORNIA

COPEC	Mammalian TRV (mg/kg/day)	Test Species	Reference	Avian TRV (mg/kg/day)	Test Species	Reference	TRV for Representative Ecological Receptor (mg/kg/day)			
							Ground Squirrel	Northern Harrier	Mourning Dove	Killdeer
<b>Inorganics</b>										
Vanadium	0.21	rat <sup>b</sup>	Efroymyson (1996)	11.4	duck <sup>c</sup>	Efroymyson (1996)	0.2	11.4	7.6	6.5
Zinc	9.60	mouse <sup>b</sup>	DTSC (2002)	17.2	duck <sup>d</sup>	DTSC (2002)	8.1	18.3	12.6	10.9
<b>Organics</b>										
<b>Landfill Gas COPECS<sup>e</sup></b>										
1,2-Dichlorobenzene	120	rat	ERD (1999)				113			
1,4-Dichlorobenzene	1770	rat	ERD (1999)				1664			
2-Butanone	10	rat	USEPA (1999)				9.4			
Acetone	1.79	mouse	ERD (1999)				1.5			
Bromodichloromethane	27.3	dog	ERD (1999)							
Chlorobenzene	NA									
Chlorodifluoromethane	15	rat	ERD (1999)				14.1			
Chloroform	NA									
Dichlorodifluoromethane	NA									
Dichlorofluoromethane	NA									
Ethylbenzene	NA									
Trichloroethene	0.7	mouse	ERD (1999)				0.6			
Vinyl chloride	0.17	rat	USEPA (1999)				0.16			
Xylenes	1030	mouse	ERD (1999)				867			

**NOTES:**

NA = No TRV available.

<sup>a</sup>TRVs for the representative ecological receptors were derived by adjusting the mammalian or avian TRV as described in the text.

<sup>b</sup>Rat and mouse body weights were assumed to be 0.250 and 0.040 kg, respectively.

<sup>c</sup>Experimental duck body weight was 1.17 kg.

<sup>d</sup>Seven-week old ducklings were used. A body weight of 0.7 kg was assumed.

<sup>e</sup>Exposure to these chemicals was evaluated only for the inhalation pathway in the ground squirrel.

**TABLE 9.11  
CHRONIC DAILY INTAKES (CDIs) AND HAZARD QUOTIENTS (HQ) FOR REPRESENTATIVE ECOLOGICAL RECEPTORS  
MISSION BAY LANDFILL  
SEA WORLD DRIVE  
SAN DIEGO, CALIFORNIA**

COPEC	Soil Conc. (mg/kg)	Soil Gas Conc. (µg/m <sup>3</sup> )	Prey Conc. (mg/kg)	Plant Conc. (mg/kg)	TRV	Ground Squirrel			HQ
						CDI Ingestion	CDI Inhalation	CDI Inhalation	
<b>Inorganics</b>									
Vanadium	4.69E+01	NP	3.47E+00	3.22E-02	1.14E+01	9.89E-06	NA	NA	8.68E-07
Zinc	6.75E+01	NP	4.99E+00	1.27E+01	1.72E+01	1.42E-05	NA	NA	8.28E-07
<b>Organics</b>									
1,2-Dichlorobenzene	NP	2.19E+02	NP	NP	1.20E+02	NP	8.43E-02	8.43E-02	7.03E-04
1,2-Dichlorobenzene	NP	1.33E+03	NP	NP	NA	NP	5.13E-01	5.13E-01	NP
2-Butanone	NP	3.09E+02	NP	NP	1.77E+03	NP	1.19E-01	1.19E-01	6.74E-05
Acetone	NP	1.04E+03	NP	NP	1.00E+01	NP	4.02E-01	4.02E-01	4.02E-02
Bromodichloromethane	NP	8.87E+01	NP	NP	1.79E+00	NP	3.42E-02	3.42E-02	1.91E-02
Chlorobenzene	NP	1.87E+02	NP	NP	2.73E+01	NP	7.22E-02	7.22E-02	2.64E-03
Chlorodifluoromethane	NP	6.46E+02	NP	NP	NA	NP	2.49E-01	2.49E-01	NP
Chloroform	NP	4.32E+02	NP	NP	1.50E+01	NP	1.67E-01	1.67E-01	1.11E-02
Dichlorodifluoromethane	NP	1.80E+03	NP	NP	NA	NP	6.93E-01	6.93E-01	NP
Dichlorofluoromethane	NP	4.43E+03	NP	NP	NA	NP	1.71E+00	1.71E+00	NP
Ethylbenzene	NP	1.91E+03	NP	NP	NA	NP	7.36E-01	7.36E-01	NP
Trichloroethene	NP	8.32E+01	NP	NP	7.00E-01	NP	3.21E-02	3.21E-02	4.59E-02
Vinyl Chloride	NP	1.46E+02	NP	NP	1.70E-01	NP	5.62E-02	5.62E-02	3.31E-01
Total Xylenes	NP	6.22E+03	NP	NP	1.03E+03	NP	2.40E+00	2.40E+00	2.33E-03
<b>Hazard Index</b>									<b>7.39E-02</b>

NA= No data available to support development of a TRV.  
NP=Not applicable.

**TABLE 9.11 (continued)**  
**CHRONIC DAILY INTAKES (CDIs) AND HAZARD QUOTIENTS (HQ) FOR REPRESENTATIVE ECOLOGICAL RECEPTORS**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

COPEC	Soil Conc. (mg/kg)	Prey Conc. (mg/kg)	Plant Conc. (mg/kg)	Mourning Dove			Northern Harrier			Killdeer		
				TRV	CDI	HQ	TRV	CDI	HQ	TRV	CDI	HQ
<i>Inorganics</i>												
Vanadium	4.69E+01	3.47E+00	3.22E-02	1.14E+01	3.57E-01	3.13E-02	2.88E+01	9.10E-02	3.16E-03	2.88E+01	1.98E+00	6.88E-02
Zinc	6.75E+01	4.99E+00	1.27E+01	1.72E+01	7.76E-01	4.51E-02	1.72E+01	1.31E-01	7.62E-03	1.72E+01	2.85E+00	1.66E-01
<b>Hazard Index</b>						<b>7.64E-02</b>			<b>1.08E-02</b>			<b>2.35E-01</b>

NA= No data available to support development of a TRV.  
NP=Not applicable.